

# THE IRON AGE

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## Airport Passenger Depots Planned

Terminals, Similar to Those Operated by Railroads,  
Will Provide for Comfort, Safety and  
Convenience of Air Travelers

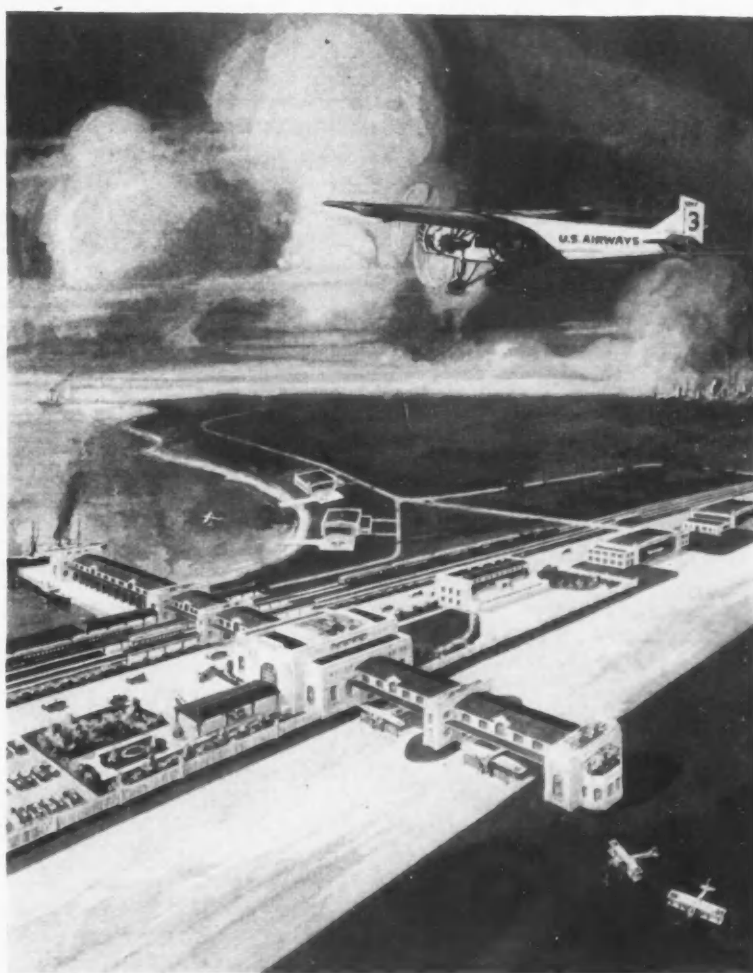
WITH the rapid increase in air transportation is coming the development of terminal facilities at airports that will provide safety, comfort and convenience for passenger traffic. It was not long ago that airports with few exceptions were little more than landing fields. It is only two years ago that a waiting room and ticket office for airplane passengers, which was said to be the first to be built in this country, was erected at the Ford Airport at Dearborn, Mich. Since then, airport building has been going on at a rapid rate and the number of airports in this country is now said to exceed 1500, but provision for adequate passenger terminals is still in its infancy.

The tremendous increase in the building of commercial airplanes, the large amount of new capital that has been put in this industry during the past year and

the recent tying up of rail and air transportation by some of the larger railroads by providing part rail and part airplane transportation from coast to coast are indi-

cations that the carrying of passenger traffic by airplanes is getting well beyond its experimental stages and that the general public is learning to accept the airplane as a convenient and safe method of transportation. Air travel has shown remarkable growth in this country in the past two or three years, which doubtless is partially due to the building of larger and safer planes and the provision of comforts for passengers. The country is now overlaid with a network of air lines from coast to coast.

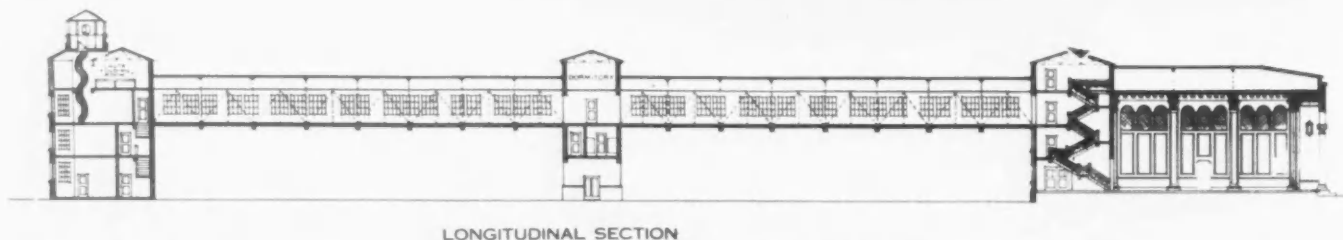
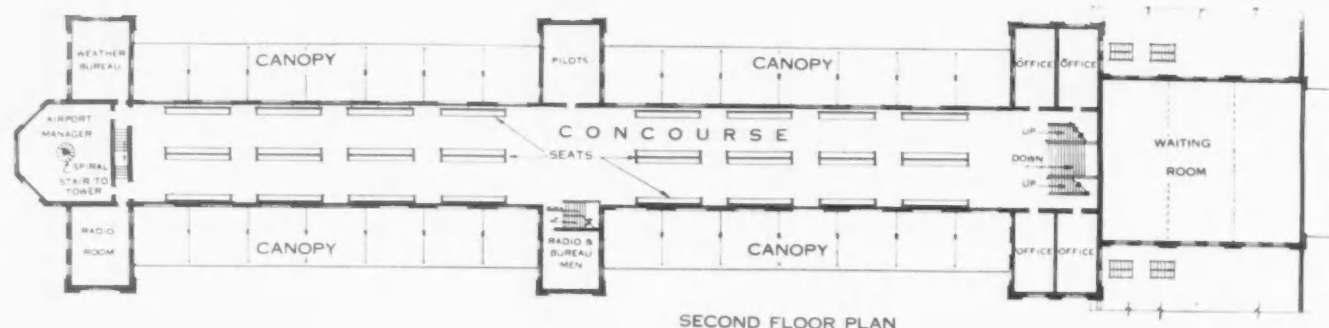
While there have been developments in the construction of airports, so far they have had to do largely with requirements growing out of the operation and maintenance of air-



A COMBINATION Air-Rail-Water Passenger Terminal, as Conceived by the Austin Co., Cleveland, for Handling Airplane, Rail, Steamboat and Amphibian Plane Traffic

craft or the necessities of companies operating planes. These include more convenient as well as larger hangars to accommodate the larger planes now being built, repair shops, rooms for the weather bureau and radio operating offices and better lighting facilities. Hangars have been improved in design and in architectural appearance. However, little attention has been given to providing for the comforts, safety and convenience of air travelers with adequate passenger terminals. While a few principal airports have passenger depots and comfortable waiting rooms, it is claimed that most of the existing airports

engineers who have long been engaged in building airports and hangars, will follow closely the methods of modern railroad terminals in handling traffic. Passengers will go through the depot to concourses that will take them to waiting planes, which they will enter without leaving cover. Such a depot will consist of artistically designed two-story building units connected by steel bridges which will serve as concourses, the buildings themselves serving as piers for the spans of covered concourse bridges. The space beneath the spans and between the piers will form covered loading areas for the



**A**IR Depots Will Have Covered Loading Areas Where Passengers Can Board Planes Conveniently in Bad Weather. Design of the air depot of the future as viewed by the Austin Co. is shown in the accompanying layout. Ample space is provided for waiting passengers and the covered areas where planes will be loaded.

are nothing more than open fields. The lack of terminal provision for air travelers, it is pointed out, is in sharp contrast with the safety features and provision for comforts in the newer types of passenger planes.

#### Engineers Planning Passenger Terminals

Competent airport engineers have not played an important part in the development of airports as they exist today, but are now being consulted to provide more adequate passenger terminal facilities, which, it is believed, will result in a marked increase in airplane passenger business. While a few airport depots have convenient waiting rooms, few if any have a system of traffic control similar to that at a large railroad terminal. Passengers in good weather and bad still embark and alight on the airport field, which not infrequently is muddy, and face the hazard of whirring airplane propellers.

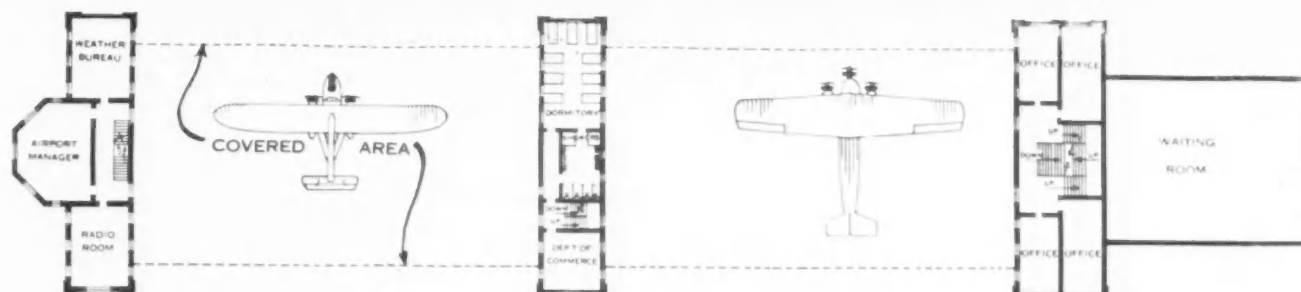
The air depot of the future, as conceived by some

planes. When a passenger arrives at the depot, he will enter the waiting room under a marquee at the entrance, purchase his ticket and go to the passenger concourse on the mezzanine floor. When the plane is announced, he will descend a stairway built in one of the piers and walk across a portable railed-in passageway similar to a ship's gangplank and through the open door of the plane directly to his seat. A variation from this plan is to have a passageway in the form of subways underground instead of building overhead bridges.

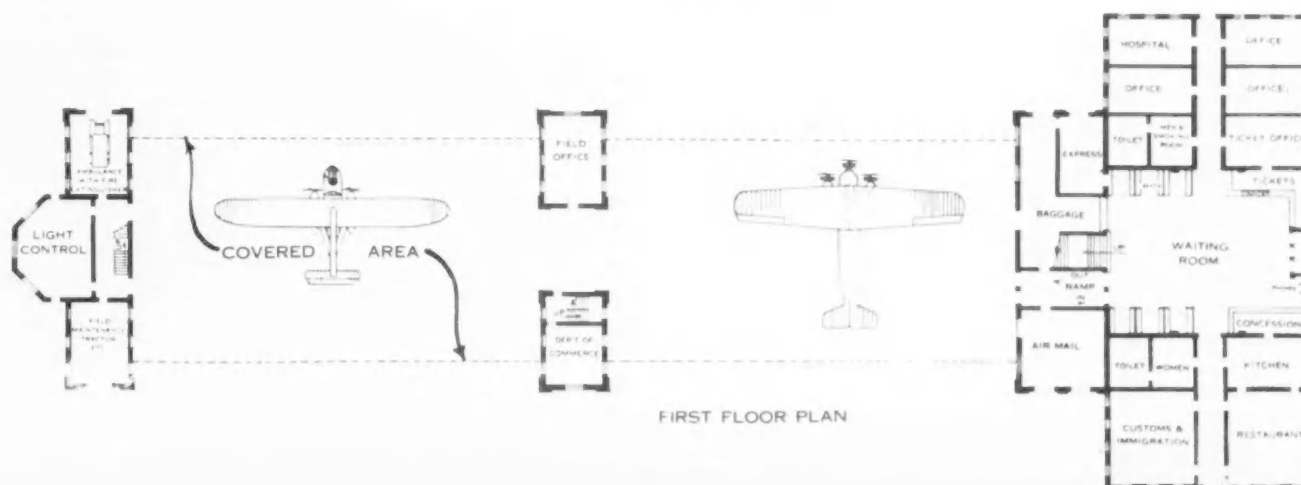
In addition to having a waiting room, the main building will have rooms for ticket and other offices, baggage room, restaurant and rooms for various other purposes. The small pier buildings will provide room for radio equipment, light control, dormitories for field pilots and rooms for other uses. This general plan, of course, is subject to various modifications in detail.

An airplane hangar designed and built recently by

THE Entrance, as Well as Other Parts of the Air Terminal, Will Closely Resemble That of a Railroad Depot



MEZZANINE FLOOR PLAN



FIRST FLOOR PLAN

CANTILEVER Type of Roof Truss Is Used in Cleveland Airport Hangar of National Air Transport, Inc. Because of the almost complete absence of columns, this hangar provides large clear spans and wide door openings



the Austin Co., Cleveland, at various locations, has a cantilever type of roof truss. Because of the almost complete absence of columns, this type provides large clear spans and wide door openings. Roof trusses are carried on the structural steel frame which supports the entire load. Hangars with this roof design can be built with door openings of unlimited width.

The horizontal top and bottom chords for the carrying trusses are built of H-sections, angles or channels, depending on the span, and consequently the stress. They are placed on 30 to 40-ft. centers. The web members can be of angles, H-sections or channels. Cantilever trusses, the outer ends of which are unsupported, are placed at right angles to the carrying trusses. They are fabricated of angles and are placed on 20-ft. centers. The roof purlins span the cantilever trusses and are placed on 8-ft. centers. They are made of 6x12 in. yellow pine on which is laid a 2-in. wood deck. In case a steel plate deck is desired, steel channels are used for purlins. In designing this type of hangar, the Austin Co. has applied its standard building design to the construction of hangars.

Side walls are brick below the sill line. Above the window sills, continuous windows of steel sash extending

up to the roof trusses are usually provided. If any portion of the hangar is partitioned for small rooms, the partition walls may be of metal or brick.

#### Various Types of Hangar Doors Used

Various types of hangar doors are in use. There are different kinds of steel sliding doors built in sections usually with glass in the upper part, steel rolling doors and a cantilever type of door which is a recent development. This type is opened by raising it outward from the bottom and when open provides a canopy sheltering the entrance to the hangar. It is built in sections that are motor-operated independently or together. One, any number of or all the door sections can be operated in approximately one minute. This door is built of structural steel and plates and has large panels of steel sash.

The airport depot of the future, if some of the present elaborate plans materialize, will result in considerable increased demand for steel in this field. A passenger terminal of the proposed type, with structural steel bridges for concourses, will require up to 1000 tons or more of steel, depending on the size, and additional steel will be needed for ornamental stairways, passageways and various mechanical equipment.

## Effect of Scrap on Operating Costs of Open-Hearth Steel

**E**XTENSIVE experiments have been made in Germany, on an actual operating scale, for studying the effect of particular grades of scrap in operating costs.

An open-hearth furnace is charged with a grade of scrap, and the manganese consumption, hot-metal additions, lime needed, time of melt, etc., are noted. On the basis of a fixed price for pig iron, the prices of the scrap are then adjusted to yield a constant operating cost per ton of steel made. Because open-hearth costs depend, to some extent, on the quality of the scrap, the Association of German Ironmasters made the instigation with the cooperation of several German plants. The results in brief, as reported by the *London Iron and Coal Trades Review*, are as follows:

In the experiments made by Ernst Kerl at the Vereinigte Stahlwerke at Hontrop, on two 120-ton tilting furnaces, the following grades of scrap were used:

- (1) Block scrap, about 6x5x20 in., weighing about 180 lb.
- (2) Clean sheet, bundled, about 36.5x30x30 in., weighing about 2,204 lb.
- (3) Detinned sheet, bundled, about 18x16x6 in., weighing 176 lb.
- (4) Clean steel turnings.
- (5) Partly rusted steel turnings.
- (6) Bought steel scrap.

The results of the experiments, consisting of eight heats in the case of scraps (1), (2), (3) and (6), and two heats in the case of (4) and (5), are shown in Table

I. The two furnaces were fired with a mixture of coke-oven gas and blast-furnace gas.

On the basis of the data, the value of the different grades of scrap was determined, and the prices then fixed to yield a constant operating cost. The results of such an evaluation are to be seen in Table II (applied to German practice). Clean unrusted steel turnings, at a price of 54 marks a metric ton at a pig iron price of 65 m. per ton, are used as the basis for this calculation. With a pig iron price of 74 m. per ton, the cost of the clean scrap was not to exceed 51 m., and with pig iron at 90 m. per ton, the clean scrap had to be as low as 46 m.

Table II.—Price of Scrap, Marks per Ton

Pig Iron Per Ton	65 Mks.	74 Mks.	90 Mks.
(5) Rusty turnings.....	51.50	48.50	44.50
(3) Detinned sheet.....	49.50	42.00	29.50
(2) Clean sheet.....	56.00	51.50	44.50
(6) Steel scrap.....	56.00	52.50	46.00
(1) Block scrap.....	58.50	56.00	52.00

The pig iron was, whenever possible, charged into the open-hearth furnace in a molten state, and was of the following average analysis: C, 4.42; Si, 0.57; Mn, 3.77; P, 0.138; S, 0.03; and Cu, 0.15 per cent. The scrap was nearly throughout mild steel carrying about 0.08 per cent carbon, and 0.40 per cent manganese, except the turnings which had a carbon content of 0.25 per cent and 0.68 per cent Mn.

Table I.—Effect of Various Grades of Scrap on Open-Hearth Results

Kind of Scrap	(1)	(2)	(3)	(4)	(5)	(6)
Metallic charge, per cent.....	78.34	66.68	55.26	74.40	77.04	70.68
Average metal charge, tons.....	125.258	133.495	138.701	133.471	136.731	125.527
Charge in lb. per ton of steel made—						
(a) Scrap.....	1824.12	1650.31	1384.28	1824.59	1905.20	1659.41
(b) Pig (molten).....	478.65	717.18	1028.67	516.30	477.44	640.33
(c) Pig (cold).....	14.98	34.25	48.51	33.06	48.20	14.89
(d) Swedish ore (68 per cent Fe).....	14.10	6.07	28.01	64.75	30.42	14.04
(e) Ferromanganese 73.5 per cent.....	7.61	9.81	12.71	12.41	8.23	10.54
Total.....	2349.46	2417.62	2502.18	2451.11	2469.49	2339.21
Time of melting, min.....	360	372	392	340	432	310
Time of boil, min.....	375	394	427	388	488	330
Total time of heat, min.....	473	468	517	554	611	450
Ingot yield, per cent.....	93.58	90.94	87.87	89.79	88.97	93.0
Ignition loss, per cent.....	4.24	6.38	9.64	7.37	9.26	4.54
Coal consumption per ton of steel, lb.....	328.9	315.9	333.0	361.9	411.4	319.4
Lime used per ton of steel, lb.....	32.5	35.9	69.3	74.1	87.2	33.0
Dolomite used per ton of steel, lb.....	36.6	36.6	36.6	36.6	36.6	36.6
Wear of furnace.....	Normal	Normal	—Badly damaged—			Normal

# Cold-Heading and Thread Rolling

## Characteristics of Steel Wire Best Suited to These Methods in Making Bolts, Screws and Rivets

BY FRED R. DANIELS\*

**G**ROWTH of the "cold process" as a means of manufacturing bolts, screws, rivets and other headed and threaded parts has been due as much to metallurgical research in steel making as to the development of automatic high-speed machinery. It is fully appreciated by many manufacturers that the process is faster than any other method for making bolts, screws and rivets of ordinary commercial sizes, and in most cases superior.

Such skepticism as once existed regarding the practicability of producing high-quality threaded work, for example, by rolling is now largely dispelled. In fact, thread rolling is generally conceded to be unsurpassed for producing screws of accurate thread form and lead. At least one reputable manufacturer employs the process for making the calipering screws of micrometers, which in itself is ample proof of the merits of the process.

It is true, however, that difficulty is liable to be experienced in producing both cold-headed blanks and rolled threads, if the physical qualities of the wire best suited for cold forging are not taken into account. It is the purpose of this article to deal briefly with this important subject.

Ordinary basic open-hearth steel of low carbon content is best adapted for cold heading, because it can be worked extensively without "crystallizing." Basic Bessemer steel is suitable also, although it has a comparatively short fibrous structure, which makes it more difficult to head, but easier to drill. Bessemer steel is, therefore, best for hollow rivets.

The wire is made from hot-rolled bar stock and cold drawn through dies which finish it to within plus or minus 0.002 in. of the desired size. It is furnished in coils up to 200 lb. in weight and should be wrapped in paper, or burlap with a tar paper covering, to prevent oxidation and corrosion, and should be stored in a dry place.

### Importance of Adequate Drawing

Drawing the wire is of utmost importance, especially when producing wire that is to be threaded. The hot-rolled stock has an open, fibrous structure which is not suitable for thread rolling and which is liable to cause split threads and rough, irregular edges, particularly when rolling sharp V-threads.

If these conditions appear in thread rolling, it is quite evident that the wire was not drawn enough; that is, the hot-rolled bar from which the wire was drawn was too near the wire diameter, to start with. Drawing closes the open, fibrous structure of the rod, thereby refining the metal. When properly drawn and thoroughly annealed this wire is best suited for thread rolling.

### Wire Finish for Bolts, Screws and Rivets

The finish of the wire is also important. Bright finished wire, which is the product resulting from drawing lime-coated stock that has not been subjected to a

metallic bath, is suitable for machine bolts and similar work, and generally is not annealed. For such work as carriage bolts having large-diameter thin heads, and square corners upset underneath the head, the wire must be thoroughly annealed after drawing, and cleaned. If the wire is not dead soft these corners will not fill out in heading.

Liquor-finished wire is especially popular for work of high-quality finish, such as cap screw, machine screw and rivet blanks of medium and short lengths, generally made on solid die headers. The finish of this wire is the smoothest obtainable. The liquor is a copper sulphate wash which deposits a coating similar to copper, but which finishes harder than copper-coated stock. The coating fills in all seams and pores on the surface of the wire, with the result that the heading dies wear less and last a great deal longer.

Copper-finished wire, also, is used for cold heading, although not so extensively as the liquor finish. The coating is a wash of copper and tin solution.

### Temper a Heavy Factor

Temper or hardness of the wire for heading and threading is of equal importance. The temper depends on the number of drafts, or reductions in diameter in drawing the wire, and it is often right here that the fundamental cause of troubles experienced in cold heading may be found.

It is common practice, when ordering wire for heading, to specify not only the analysis of the steel and the finish but also the temper or degree of hardness. Failure to take the various factors mentioned into account when ordering will result often in difficulties that could be prevented.

### Heat Treatment of Blanks

Cold-headed blanks are usually annealed to remove the heading strains. Work having heads of unusual size or shape is annealed before the heads are completed and then finished in a reheader. However, the quantity of reheating work is comparatively small, it being possible in most cases to upset practically any head in a two or three-blow header.

A heat treatment is recommended, especially for carriage bolts and work having special heads, and consists of thoroughly heating and quenching the blanks in oil. The exact procedure depends on the composition of the steel and is defined by the manufacturer. Heat treating increases the tensile strength of the bolts and refines the structure of the metal. Quenching in water after heating is another means of toughening the blanks.

Machine bolts of ordinary proportions are not always heat treated after heading, because the heading strains are not so severe as those in carriage bolt heads, which are shallow and brought down to a thin edge.

Low-carbon steel analyses suitable for small screws, such as used in electrical work and ordinary fixtures, for

\*Waterbury, Conn.

agricultural machinery bolts (not heat treated) and for machine and carriage bolts, follow:

Carbon	0.08 to 0.12 per cent
Manganese	0.35 to 0.45 per cent
Sulphur	0.03 to 0.04 per cent
Phosphorus	0.03 to 0.04 per cent
Silicon	0.10 per cent

For hex-head cap screws used in the automotive industry the steel known as Type G wire is used extensively. A steel of higher carbon content, known as Type E wire, is used also for automobile screws. Their chemical analyses are:

	Type G	Type E
Carbon	0.08 to 0.15 per cent	0.27 to 0.37 per cent
Manganese	0.30 to 0.45 per cent	0.70 to 0.90 per cent
Sulphur	0.05 per cent (maximum)	0.05 per cent (maximum)
Phosphorus	0.03 per cent (maximum)	0.05 per cent (maximum)
Silicon	0.07 to 0.15 per cent	0.07 to 0.15 per cent

Other steels suitable for cold-heading are those in the S.A.E. standard specifications, No. 1010 to 1035 inclusive.

In the alloy steel field are numerous analyses suitable for cold-heading and threading. It is difficult, however, to head a nickel steel containing over 3 per cent nickel and over 0.20 per cent carbon. All alloy steels should be heat treated after cold-heading. Following are two steels that can be recommended for average heading operations:

Carbon	0.30 to 0.40 per cent	0.10 to 0.14 per cent
Manganese	0.50 to 0.70 per cent	0.28 to 0.38 per cent
Phosphorus	0.04 per cent (maximum)	0.04 per cent (maximum)
Sulphur	0.04 per cent (maximum)	0.04 per cent (maximum)
Silicon	0.10 to 0.25 per cent	0.10 to 0.15 per cent
Nickel	1.00 to 1.50 per cent	.....
Chromium	0.50 per cent	0.25 to 0.30 per cent
Vanadium	.....	0.13 to 0.26 per cent

## Preparing Steels for Forgings

### Overcoming the Effect of Overheating—Service Not Affected by Dendritic Structure—Protective Glaze for Furnace Walls

THREE papers of special interest to forgers were presented at one of the sessions during the National Metal Congress in Cleveland, Sept. 9 to 13. Two of them discussed the protection of furnace walls and the overheating of steels, while the third considered the matter of fiber and dendritic structure.

#### Albany Slip—A Refractory Glaze for Furnaces

William J. Merten, metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, finds that the so-called Albany slip (a refractory glaze used in the high-voltage porcelain industry) is an excellent protector of furnace fire brick. The finely ground powder suspended in water is sprayed thoroughly over the cold brick and left to dry. Then the heat is put on and raised gradually to 2000 deg. Fahr., when a glaze forms into a continuous protective sheet. This converts the chamber into a heat-reflecting and radiating body of high efficiency, reducing heat losses and the time required to raise the steel to temperature. Cooling causes the glaze to develop small craters but these heal on subsequent heating. Reglazing is necessary at intervals.

Fred G. Frisbie, Duquesne Steel Foundries, Pittsburgh, said he had used the glaze at a temperature of 1700 deg. Fahr., on annealing furnaces for steel castings, and found it to be a good heat reflector and to promote equality of temperature between furnace walls and contents even though the glaze had not been fritted by a preliminary high heat. However, he could not agree with Mr. Merten that the same glaze would protect steel from oxidation in a sharp furnace atmosphere, even if the metal had been dusted with soapstone previous to dipping into the Albany slip.

#### Effect of Overheating Steel for Forging

Two papers on the burning and overheating of steel had already been published by W. E. Jominy, University of Michigan, Ann Arbor, Mich., resulting from investigations financed by the American Gas Association. A final summary was presented under the title "Overheating of Steel for Forging." Temperatures at which steels show evidence of incipient fusion, that is, the burning temperatures, were determined by microscopic studies. The question then arose whether the coarse crystallization, caused by reheatings below the burning heat, would cause damage to forgings, or induced any effect which could not be removed by subsequent heat treatment. Mr. Jominy

therefore raised the common carbon and nickel forging steels to various temperatures in a range just below burning, heat treated them (quench, draw, and normalize) and then tested them in tension, performed the McQuaid-Ehn test for carburizing, and examined the microstructure. In general he found no reduction in ductility or other properties when the steels were heated no higher than the following temperatures, which he fixed as the maximum safe temperature for heating prior to forging:

	Deg. Fahr.
S. A. E. steel No. 1015.....	2650
S. A. E. steel No. 1030.....	2600
S. A. E. steel No. 1050.....	2525
S. A. E. steel No. 1090.....	2375
S. A. E. steel No. 3145.....	2450

O. W. Ellis, Mellon Institute, Pittsburgh, pointed out that Mr. Jominy's determinations of the burning temperatures gave figures considerably higher than the solidus line in the iron-carbon equilibrium diagram as at present accepted, and indicated that some revision would be necessary. The new figures do check those of Carpenter and Keeling who published the earliest precise diagram showing the melting points of steels.

#### Problem of Dendritic Steel Discussed

An interesting treatment of the question of "Dendritic Steel" was given by H. G. Keshian, metallurgist, Chase Companies, Waterbury, Conn., since he gave evidence regarding the physical properties of steels of comparable analysis, some of which were dendritic and others which did not have this structure—at least to an evident degree. In the forged and heat-treated condition, no material difference can be detected in the tensile properties so the author concludes that the microstructure and not the macrostructure is the dominant factor. In fatigue, as denoted by the Stanton repeated impact test, a dendritic one per cent carbon steel had a slightly lower value. Directional properties (specifically, reduction in area) were less favorable in a dendritic chromium-nickel steel but in wearing properties, when made into drawing dies, no difference could be detected.

A free discussion followed this paper by Mr. Keshian, but it all had to do with the cause and production of dendritic steels, and did not contest his main conclusion that satisfactory service in a sound steel is not related to its possession of visible dendritic structure or lack of it.

# Production Control in Steel Foundry

Sivyer Shop Uses Checks, Frequent Inspections and Daily "Pow-wow" to Meet Specifications and Scheduled Delivery Dates

BY ROGERS A. FISKE\*

**A**CCURATE checks on materials and plant methods, rigid inspections at frequent intervals and establishment of channels of informed intelligence are the main factors which have enabled the Sivyer Steel Casting Co., Milwaukee, to keep close control of orders and materials in process, and to forward an unusually high percentage of orders on dates scheduled.

This is a jobbing foundry and imposed upon it are the common limitations in the standardization of materials and operations. Special attention, therefore, has been

given to the control of variables from the standpoint of fundamentals of steel casting production and quality. Control of the variables which affect quality begin at an early stage of the process, even before a charge of scrap is loaded into the furnace. Incoming scrap and other materials are inspected before being unloaded from the car.

A 1000-lb. test heat, which is carefully observed by the melter, is made from each car of scrap before the car is unloaded. An analysis is made of a test piece taken from the furnace as soon as the metal has melted down. This analysis is taken not only to decide acceptance or rejection of the carload, but as a means of placing the scrap in its

\*Western editor, THE IRON AGE, Chicago.



**E**VERY Afternoon Shop Executives (Right) Study Patterns Which Are to Go Into the Shop. Records of past difficulties are analyzed, also

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**W**ORK Order Cards Are Filed on the Schedule Board (Above) in Accordance with Dates Which Have Been Established by the Foremen



proper bin, since incoming scrap is segregated according to carbon or sulphur and phosphorus content.

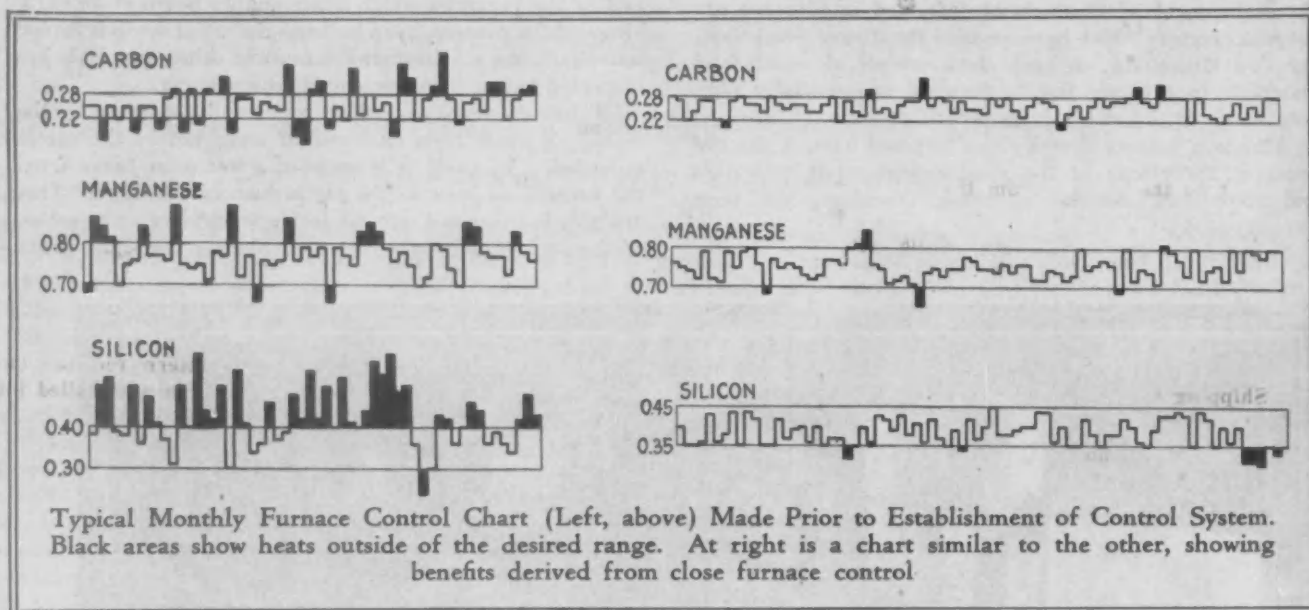
Each heat of steel is analyzed for the required elements, immediately after tapping from the furnace, and its analysis is reported to the melter before the next heat is tapped. This practice promotes better analysis control, by giving the melter the analysis of one heat before he taps the next. It also enables the operating department to hold out castings the analysis of which does not conform to required specifications. This latter practice is of material aid to the production department, for new molds may be made up, without much time lost, to replace castings which do not meet analysis requirements.

Melters are paid a bonus to stimulate interest in analysis control. This bonus is based upon a score which is obtained by dividing the total number of points outside the desired analysis range by the total number of heats. As

by issuance of forms and records at strategic points, which are supplemented by organized personal attention of the production department or supervisory force.

New orders are entered on Form A in duplicate, one section being a recapitulation of the information given in the order, and the other section is used for entering information relative to cores needed. At this point, the receipt of the order, careful check is made of previous orders, if any, for the same patterns. Quotations are checked, questions of analyses are settled, and delivery promises previously given are entered for shop information.

From the order recapitulation one work order, Form B, consisting of four cards, is issued for each pattern. One copy is sent to the shipping department, one to the pricing department and two to the pattern storage. The form sent to the shipping department provides space for dates, pieces made, pieces shipped, defectives and delivery dates



the score diminishes, the per cent of bonus, based on monthly salary, is increased in ascending rates. If a heat is scrapped for wrong analysis, a definite percentage of the bonus is subtracted as a penalty.

The melter records the analysis of each heat, as well as the amount of alloys used, on an analysis log. He is required also to make a report of materials used for each heat, which is sent to the accounting department. And he makes a report of furnace operations and delays, for the melting foreman. Physical tests are made at regular intervals and their data, as well as the chemical analysis, are permanently recorded in the laboratory, the former on a card index file, the latter on a daily analysis report, which is later bound and filed.

Of special interest is the method of sand control. Incoming sand is tested for fineness. The sand mill is provided with an indicating and recording time-meter, which regulates the milling time. A control sand laboratory is placed near the sand mill. Here one man devotes his entire time to testing facing and backing sand mixtures, the object being to eliminate variables as much as possible.

#### Control of Work in Process

In a jobbing steel foundry the establishment and maintenance of production and shipping schedules require close and persevering attention. It is difficult to control fully by work tickets the movement of individual castings or orders. Automatic progression cannot readily be obtained by continuous conveyors, due to the varying condition of the product in process, and diverse circumstances governing sequence of operations. However, control is obtained

scheduled. The shop cards provide space for specific instructions needed to put the job in process and to show a record of work performed. Printed on these cards in bold-face type is the warning "Payment will be made for good castings only."

A core order, Form C, is made from the core recap of Form A. Form C is sent to the core department with core boxes at least two days before the molders get their work orders. This allowance of time is considered ample to permit the core-making department to have its part of the work completed well in advance of the beginning of molding operations.

#### Old Patterns Studied Before Again Being Sent into Shop

Shop orders, upon leaving the office, are sent direct to the pattern storage and all pattern equipment required is laid out on a bench for inspection. Every afternoon a meeting of the shop executives is held for the purpose of carefully studying and examining pattern equipment which is to be used. Accompanying each old pattern are records of any difficulties reported, either by the customer or the foundry, on previous orders. Unusual loss by defectives is also given consideration at this time.

Both old and new patterns are individually checked from the standpoint of design, method of casting manufacture, state of repair, anticipated defects and matters affecting scheduling of the order. In most cases foundry equipment consisting of heads, gates, etc., is inspected with the pattern or is ordered from the pattern shop at this meeting. This insures consistent manufacture of the casting in the approved method on successive orders. Matters requiring communication with the customer are

## A ORDER RECAP

CUSTOMER										DATE RELEASED									
CREDIT										LISTED ACKNO'W'D									
CARDS										TONNAGE									
Order No.	Pattern	Pcs.	WT	Part	Steel	Rel.	On Hand	Price	Spec. Inst.	Moulding Price	Pattern								

## A1 CORE RECAP

CUSTOMER										DATE RELEASED										
CREDIT										LISTED ACKNO'W'D										
CARDS										TONNAGE										
Order No.	Pattern	Pcs.	WT	Part	Steel	Rel.	A	B	C	D	E	F	G	H						

Hours Day Work $\frac{1}{4}$ $\frac{1}{2}$ 1 2 3									
CORE ORDER									
Customer: <b>C</b>									
Core Symbol <b>C</b> Dept.									
Date _____									
Cores due _____									
Good Cores made _____									
Cores due _____									
Coremaker _____									
Wages _____									
Broken Cores									
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

## B

WT. H. & G.										YIELD %										PCS. ORDERED										WEIGHT										NAME OF PART										STEEL										PRICE DATA										PRICE									
SHIPMENTS										MOLDING										DEFECTIVES																																																											
DATE	PCS. SHIPPED	DUE TO SHIP	DATE	PCS. SHIPPED	DUE TO SHIP	DATE	PCS. MADE	DUE TO MAKE	DATE	PCS. MADE	DUE TO MAKE	DATE	PCS. DEFECTIVE	TOTAL	DATE	PCS. DEFECTIVE	TOTAL																																																														

## D Pattern Order Record

Customer \_\_\_\_\_ Serial No. \_\_\_\_\_ Acct. \_\_\_\_\_

NEW CHANGE REPAIR

Please get \_\_\_\_\_ price and return to \_\_\_\_\_ Our property

Authorized: Place order \_\_\_\_\_ Order No. \_\_\_\_\_ Amt. \_\_\_\_\_

EQUIPMENT DESIRED

Remarks \_\_\_\_\_

Delivery \_\_\_\_\_

Quotations

Hrs. \_\_\_\_\_ Mat'l. \_\_\_\_\_ \$ \_\_\_\_\_ Del'y. \_\_\_\_\_

\_\_\_\_\_ \$ \_\_\_\_\_ Del'y. \_\_\_\_\_

\_\_\_\_\_ \$ \_\_\_\_\_ Del'y. \_\_\_\_\_

## B1

HOURS POURING										PCS. ORDERED										WEIGHT										PRODUCTION									
1 2 3 4										5 6 7 8 9 10																													
Molder _____ No. _____										Molder _____ No. _____										Molder _____ No. _____										Earned Molds _____									
Molds _____										Good Molds Made _____										Balance _____																			
Payment will be made for Good Castings Only																																							
SPECIAL INSTRUCTIONS										MOLD PRICE																													
ORDER DATE										ENTRY DATE										PATTERN REC'D.																			
CUSTOMER										ORDER										PATTERN																			

**F**ORMS Used in C is to be and what job in production. C D records orders for n or shortage; three copie G is issued if it is neces



[illegible]

? (Foreman to fill in)

Complaint or Special Instructions  
**RECORD**

PAT. No. \_\_\_\_\_  
Date \_\_\_\_\_ Entered by \_\_\_\_\_

Date \_\_\_\_\_ Entered by \_\_\_\_\_

Date \_\_\_\_\_ Entered by \_\_\_\_\_

RETURNED TO PATTERN STORAGE AND FILED WITH PATTERN RECORD

Date \_\_\_\_\_ Entered by \_\_\_\_\_  
 Date \_\_\_\_\_ Entered by \_\_\_\_\_  
 Date \_\_\_\_\_ Entered by \_\_\_\_\_  
 Date \_\_\_\_\_ Entered by \_\_\_\_\_

Entered by \_\_\_\_\_

RETURNED TO PATTERN STORAGE AND FILED WITH PATTERN RECORD

THE IRON AGE, October 17, 1929



brought to the attention of the production or the sales department. Corrective steps are taken if necessary, and these are noted on the shop orders and permanent records. This meeting is attended by the superintendent or his assistant, the chief inspector, the pattern foreman, the core room foreman and members of the production department.

Each morning all approved orders received at the pattern storage on the day before are given to the schedule clerk. The foreman of each molding department is called in and the jobs as a whole are discussed and molders are assigned. Dates on which shop work will begin on the various jobs are set according to work ahead. The work-order cards are then filed on the schedule board in accordance with the dates which have been designated. At this time the records of previous difficulties are examined and acknowledged by the molding foreman. The foreman is then held responsible for fulfillment of molding schedules according to orders assigned to individual units, and he makes necessary arrangements for delivery of complete equipment to the molders. A day-by-day record of his schedule efficiency is kept, and is one of the items considered at the daily production meetings.

After a job is definitely scheduled, one copy of Form B is sent to the office. From the date recorded thereon a shipping date is determined and the customer is notified when shipment will be made. This copy of the order is the production department's delivery control record. Both molding and shipping dates are recorded thereon and it is used daily in checking progress of orders so as to insure movement in process and shipment as promised.

#### Shipping Schedules Discussed at Production Meetings

At 2 p.m. each day a production meeting is held, at which molding and shipping of scheduled orders are discussed and current and overdue promises, both of molding and finishing departments, are given particular consideration. The primary purpose of this meeting is to pry into causes of delays and rectify them before they have been in effect long enough to check production seriously and result in dissatisfaction at a delivery promise not kept. It is the aim of the management squarely to place responsibility for all schedules and production work, but it does not want single-handed direction. Cooperation among all persons interested is expected, and accordingly the chance for error or omission is greatly lessened.

An interesting feature in connection with the pattern shop is that it has been placed on its own merits. A customer who is in need of a pattern may ask for a bid from the Sivyer shop which often is competitive with outside pattern makers. Blueprints are carefully studied by the superintendent and assistant superintendent and suggestions are made for design improvement if difficulty is foreseen. The most advantageous method of pattern construction from the casting quality viewpoint is determined and is used by the pattern shop in making its estimate. Patterns, when ordered, are recorded on Form D.

Back of the desire to eliminate difficulties and to rectify them quickly when encountered is the thought that every such case is an opportunity to build prestige with a customer, and it can be made an incentive to keep the pattern at the Sivyer foundry. Defects are often discovered in the shop. These frequently can readily be rectified without inconvenience to the buyer. However, it is the omission that leaves the plant that nettles the purchaser, and which may be the direct and primary cause of loss of future business. Accordingly special attention is given difficulties which purchasers have experienced with Sivyer products. An expression of trouble may come by letter or by word, or it may be passed along to a salesman. Whatever the source, immediate attention is given it.

The detailed report is entered on Form E (not illustrated), which is headed "Disposition of Difficulty Reported

by Customer." This report shows how the difficulty has been overcome, a reply by the inspector, and finally the question "Have we written customer?" In the upper right-hand corner is a ruled space for the signatures of the superintendent, his assistant, the quality supervisor, chief inspector, and members of the production and sales department. If necessary to call attention to the difficulty reported, when future orders are produced, a "Special Instructions" card is issued.

#### Records Disclose Past Difficulties

This sheet (Form E) is attached to the pattern storage record, and goes with the pattern each time it is called out of storage. In this way the foremen familiarize themselves with past difficulties whenever a pattern is called into the shop.

Sample castings are made on any pattern specified by the customer, from new patterns produced in the Sivyer pattern shop, or when desired by the shop executives. These castings are given personal supervision by the assistant superintendent and the quality supervisor. A follow-up method is used, necessitating approval from both the manufacturing and the quality standpoints, to insure recording of instructions available for future reference before the original request is filed.

Careful watch is kept on the space on Form B which is provided for defective material. If an excessive percentage of castings on an order is found defective a high-scrap Form F is made out in triplicate by the production department. One copy goes to the superintendent, another to the chief inspector, and the third, which is printed on cardboard, is attached to the pattern record. This comes to light again when the pattern is next called into the shop. The information on Form F is studied at the pattern meeting.

Checks on general defective control are a daily procedure. In a conspicuous place in the main shop are three red lights which are labeled respectively floor molders, jolt machines and squeezers. At the end of each work day the total scrap is computed for each of these three departments. The one with the highest percentage of scrap is known to all the workmen because the red light designating that department burns during the next day.

Inspection forms an important link in maintaining quality and in catching errors before they reach the stage where they cannot be readily rectified and shipping schedules cannot be maintained. Each inspector has a specific station at which he examines each casting as it passes. It is also his duty, when not pressed with work at his station, to make general inspections. By this arrangement the workmen do not know at what stage of their work a close check will be made. The principal stations for inspectors are on the molding floors, prior to sand blasting, after grinding and chipping, after welding, and the final inspection prior to shipment.

Those in charge of responsible work are given full assistance, but, once a course is determined, then responsibility is placed squarely where it belongs. All reports made in the shop are written on carefully prepared forms, which always provide ample space for the signatures of the men through whose hands they pass. These reports are kept alive, that is, they are readily available for future use in placing responsibility, and it is known throughout the shop that they will quickly be used for that purpose.

At first this system may seem extremely strict in placing the blame for errors and omissions. However, it builds among the men a sense of responsibility and pride. Good work is quickly recognized and bonuses are the reward. It holds the organization to a sense of obligation to the purchaser, and the results are exceptionally satisfactory when it is considered that this jobbing steel foundry sends its products to 30 major groups of industries in 28 States.

# Business Is on a Firm Footing

Industry and Trade Are Free From Inflation and Should  
Not Be Severely Shaken If Bull Stock  
Market Comes to An End

BY DR. CHARLES O. HARDY

**B**USINESS continues to display a higher rate of activity than most observers anticipated a month or two ago, and such slackening as is evident has occurred chiefly in those industries whose pace during the summer was obviously too high to be maintained continuously.

Electric power consumption, railroad freight car loadings, coal production, employment and the turnover of bank deposits are all reported at high levels. Corporation reports of earnings for the first half of 1929 reflect an even more favorable condition than was expected on the basis of the high level of productive activity which has been reported throughout the year.

The decline in the rate of operations of the steel industry which began early in the summer continued up to the end of September, but reports of operation so far in October indicate a turn for the better. Unfilled orders of the United States Steel Corporation for Oct. 1 show an increase for the first time since April. The improvement is apparently due chiefly to a good volume of railroad buying, which offset a slackening of orders from the automobile industry.

Some relaxation of activity in the automobile industry is not surprising considering that the output for the first nine months of 1929 surpassed that of any previous complete year. The slack in the low-priced car market, which arose from the long interruption of Ford production, is apparently now substantially taken up, so that further sales may be expected to be more representative of replacement demand and the normal growth of the business.

Bad crop conditions in the West and in the South give rise to apprehension of restricted farm buying, but reports of both wholesale and retail trade are very favorable.

## Gold Loss Forced Rise in English Rate

Money market conditions and the stock exchange have continued to hold the center of the stage throughout the month, the "big news" being, first, the increase of the discount rate of the Bank of England, followed by advances by the Scandinavian central banks, and, second, several spectacular breaks in prices on the New York Stock Exchange. Does either of these developments suggest the probability of a change for the worse in the level of business activity?

¶ Fundamentals of prosperity undisturbed by technical condition of securities market.

¶ Question is not whether speculation overestimated the prosperity of business, but whether business men have overestimated their markets.

¶ If bull market in stocks is over, major business depression need not be feared.

¶ In previous bull markets business itself was shot through with speculation and price inflation.

¶ Higher European bank rates do not necessarily mean tighter money here.

¶ Federal Reserve's attempt to restrict speculation is likely to be abandoned if business, rather than the stock market, is choked.

¶ A major stock market decline would interfere temporarily with financing programs.

¶ Shift from stocks to bonds might take three to six months, but would facilitate financing of small companies, residence construction, foreign loans and Government enterprises.

The increase in the Bank of England rate, from 5½ to 6½ per cent, undoubtedly points to the probability of continued high money rates. Ever since the Federal Reserve System abandoned its cheap money policy and began selling securities at the end of 1927, New York has been a magnet for European, and especially for British, gold. European funds in increasing volume have been placed in the New York call loan market and acceptance markets, while at the same time the amount of foreign bonds placed here has shrunk to a small fraction of the amounts placed a year or two ago. With more European money loaned here on short-term accounts and less borrowed on long-term accounts, pressure has been exerted on the European exchanges, the gold outflow from this country has stopped and since then over 200 million dollars of gold has come in.

This inflow has enabled our banks to replenish their reserves, offsetting the effects of the sale of securities by the reserve banks and to that extent reducing the need for rediscounts. If the higher rates in Great Britain should result in a renewed eastward movement of gold, the pressure on our money markets will be intensified.

This does not necessarily mean, however, that business will be so pinched by money shortage as to make impossible the continuance of the present era of prosperity. Several alternatives suggest themselves. First, the pull of the New York call loan

market may be sufficient to overcome the influence of the new higher rates. If so, it seems unlikely that the British public opinion (which since the war has been extremely sensitive on the subject of money rates and their supposed cramping effect on business) would tolerate further advances in the rate. Rather it seems likely that indirect means would be found to replenish the gold reserve and restrictions would be placed on foreign lending of British funds in order to make possible the financing of domestic business at rates no higher than those now in effect.

As a second possibility, the stock market liquidation which has been under way for the past few weeks may proceed so far as to release funds now tied up in brokers' and speculators' balances, with the result of easing the market for all types of loans. This has obviously been the objective of Federal Reserve policy for months. While the policy has so far been unsuccessful, it may yet succeed,

or may seem to succeed, because the speculative fever has run its course.

Third, considerable relief may still be found through a change in the composition of the credit structure. A shift of a large volume of deposits from demand to the time form would lessen the required reserve and furnish slack to offset the tightening effect of the withdrawal of European funds. This process went on at a great rate for several years prior to 1929, though it has ceased for the past 12 months. More probably, and in greater degree, the market pressure may be relieved by the shift of funds from the bank loan accounts to direct loans by individuals and non-banking institutions (of which the conspicuous case is "brokers loans on account of others").

#### Federal Reserve Policy May Change

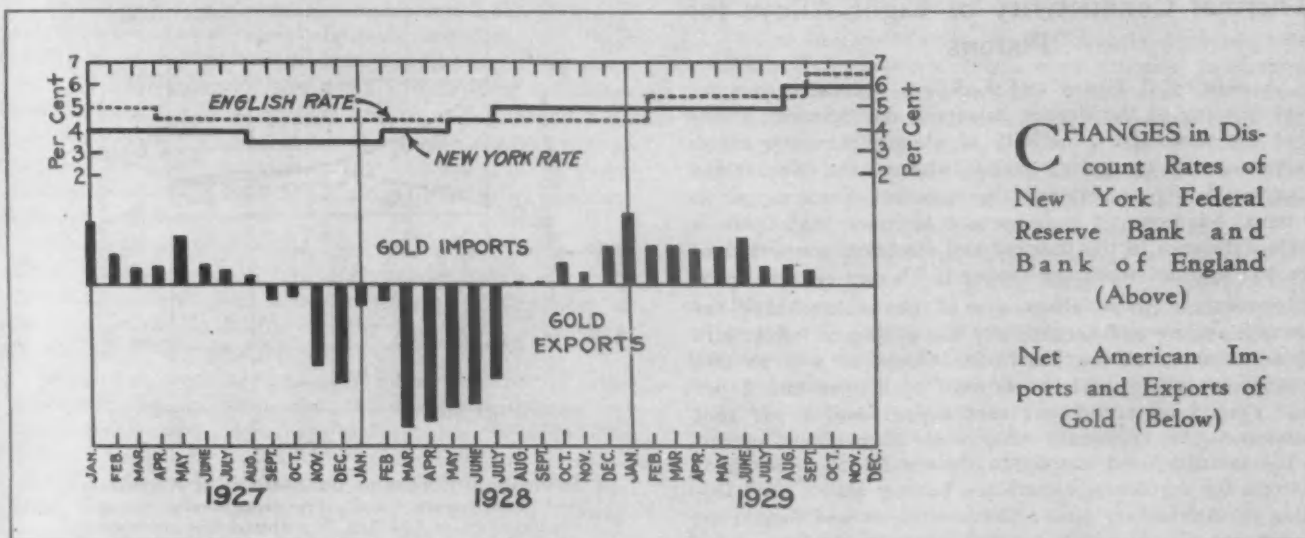
Fourth, and most likely, the Federal Reserve authorities may elect to put additional credit into the market to offset the effect of such gold withdrawals as may result from the recent advances in European bank rates. There can be little doubt that such action would be taken as soon as it became evident that the movement of goods in com-

found in the behavior of the stock market, where prices have broken very sharply on several occasions, the break in each case being followed by a strong upward reaction. Many market observers are of the opinion that we have finally reached the top of the bull market which began in 1924, and there has been widespread uneasiness lest the anticipated decline in stock prices may operate to undermine confidence and lead to a curtailment of the scale of business operations.

We are not disposed to offer a prediction as to the immediate future of the stock market. Appearances certainly indicate that quotations are out of line with present and prospective earnings and are being sustained by buyers who hope to resell presently at still higher prices. Competent observers have been deceived so often, however, by the vitality of this bull market that confidence in all forecasts is at a low ebb.

#### Inflation Localized in Stock Exchange

What, however, is the probable effect on business if the stock market has actually reversed its trend? In the past a major downward turn in stock prices has often been the



merce and the rate of industrial production were being restricted on account of the tightness of the money market. The objective of the Federal Reserve policy in recent months has been to force a contraction of speculative credit, not because of immediate need but as a safeguard against an anticipated deficiency of commercial and industrial credit.

Because both business and speculation have shown such unexpected indifference to the level of money rates the restriction of Reserve credit has gone much further than any one anticipated when the policy was initiated. If it should presently appear that business, rather than the stock market, is being choked off by this restrictive policy, we may confidently expect it to be abandoned. Indeed, the softening of money rates over the past two weeks in the face of higher rates abroad seems to indicate that Reserve Bank purchases of acceptances have already gone beyond the amount necessary to accomplish the nominal purpose of providing credit for the autumn seasonal excess of demand for currency and for export credits.

It does not appear, therefore, that increase in the English bank rate is an alarming adverse development in our own business situation. British rates have long been obviously too low in the light of world-wide demand for credit for speculative purposes, and this attempt to bring them into line with world markets needs occasion neither surprise nor alarm.

The second adverse development of the past month is

immediate forerunner of a wave of business liquidation. This was true in 1890, in 1903, in 1907, and in 1919-20. Such experience, however, is of doubtful application to our present situation. These peaks of stock speculation which were forerunners of business collapse occurred at times when the whole business world was itself shot through with speculation and price inflation; indeed, those stock market booms were only indexes of a general excess of optimism which expressed itself in overborrowing, over-expansion of plants, and overaccumulation of inventories. Today apparently inflation is pretty well localized in the stock exchange. If this is true, we cannot safely use stock price trends as mechanical forecasters of business changes.

May there not be a more direct causal relationship? Would not the mere psychological effect of a stock market collapse produce a wave of pessimism and lead to the wholesale curtailment of business commitments? And further, would not the withdrawal of public support from the stock market curtail the financing of industry and thus force a contraction in industrial construction, with consequent repression of many other lines of activity?

As to the first of these questions, opinion is only opinion. Mass psychology defies prediction. Sometimes a turn in public sentiment has been effected by a shock much less far-reaching than a stock market collapse of major proportions would be now; and sometimes it has defied far greater shocks.

As to the second question something more definite can

be ventured. Certainly a real stock market decline would interfere temporarily with current financial programs. The shift of preference of the investing public from bonds and other types of loans to stocks has led to a corresponding shift in American methods of financing business. The change has worked to the advantage of large and well-known firms which have already a market, or can create markets, for their stock. It has worked to the disadvantage of small concerns, of residence construction enterprises, of foreign borrowers, and of Government and municipal enterprises. A collapse of confidence in the stock market would presently lead to a revival of bond buying and of the types of enterprises which cannot take advantage of the stock market boom.

This effect would not be immediate. Typically in the past in a major liquidation of stocks, bonds, though already low, have gone down with stocks (largely on account of forced selling to protect stock holdings), and there has been an interval of from three to six months before the bond market turned upward. It would be surprising if a

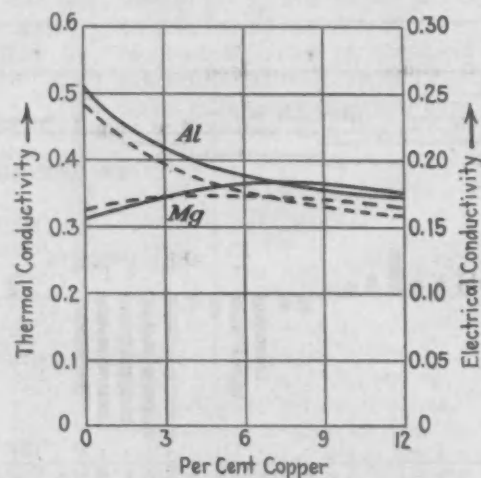
similar result should not follow on the next prolonged stock market decline. Investors can wait, and in times of liquidation are likely to wait till the drift of things is clear. It seems probable, therefore, that some curtailment of new financing, and of new construction, will be necessary in connection with the next bear market in stocks—whether it occur this fall or many months hence.

Basically, however, the foundations of prosperity and depression are not to be found in the technical condition of the stock market or the bond market. The question is not whether investors and speculators have overestimated the prosperity of business; it is whether business managers, by and large, have overestimated their immediate and prospective markets. If we are right in our judgment that hand-to-mouth buying rather than speculative accumulation is still the order of the day in the commercial world, and that industry has not in general overestimated its needs and loaded itself with structures and equipment far beyond its needs, we must conclude that no serious business depression is in prospect.

### Thermal Conductivity of Light Alloys for Pistons

A note by C. Grard and J. Villey, presented to a recent meeting of the French Academie des Sciences, shows that the thermal conductivity of aluminum-copper alloys decreases with increasing copper, whereas the effect in the magnesium-copper series is the opposite. Since copper is a usual hardener, it is important to know that there is little difference in the thermal and electrical properties of the two systems when the copper is 7½ per cent or more.

Several of these alloys are of particular value for aircraft engine parts, especially the aluminum alloy with 18 per cent of silicon known as Alpax, as well as two magnesium alloys with 4 per cent of copper and 2 per cent aluminum, and 2 per cent copper and 4 per cent aluminum. An aluminum alloy with 12 per cent copper is the mixture used largely in France for the casting of pistons for airplanes, experience having shown that this alloy is satisfactory under the conditions and heat (300 to 320 deg. C.) to which it is subjected in service.



Influence of Copper on Conductivity of Aluminum and Magnesium. Full line represents thermal conductivity at 100 deg. C.; dotted line represents electrical conductivity at 100 deg. C.

### Steel Box Cars on Rubber Tires

THE St. Louis Southwestern Railway has placed in service several highway freight trains made up of steel vans approaching box car dimensions. The vans, which are mounted on pneumatic tires, have inside measurements of 16 ft. in length and 7 ft. in width and height. Rear doors have piano-type hinges and a side opening has sliding doors. When loaded the vans may be sealed to insure the safety

of the goods in transit. The trains are drawn by large truck tractors and are equipped with Westinghouse brakes.

The highway freight train was developed following years of study by railroad engineers to find a way of avoiding frequent stops of heavy trains to pick up or deliver small shipments. The highway vans were built by the Columbian Steel Tank Co., Kansas City, Mo., and are mounted on Lapeer trailers.



# Anneals Magnetic Sheets Electrically

Reducing Atmosphere Eliminates Necessity for Boxes  
and Produces Bright Sheets, Without "Stickers",  
Having Improved Magnetic Characteristics

BY F. E. FINLAYSON\*

**A**NNEALING is one of the most important processes in the manufacture of laminated steel used in the magnetic circuit of an alternating current electrical machine. Proper annealing goes hand in hand with the proper chemical analysis in producing a grade of steel which will give the lowest electrical losses.

Silicon steels are most commonly used for magnetic purposes because of their relatively low cost, and their ability to reduce hysteresis losses in the machine, when properly heat treated. For some applications, steels are used having a silicon content in the neighborhood of 4 per cent. Other steels having the silicon content around 2.5 per cent and 1.25 per cent are used. One grade known as standard steel has a silicon content of less than 0.25 per cent.

Magnetic steel is rolled into thin sheets for laminations, which are most frequently about 0.014 in. thick. Laminations are used, however, ranging in thickness up to about 0.025 in. After rolling the sheets are cut to proper shape by stamping.

Magnetic steel is annealed either before or after punching. In preparing for the anneal the sheets (or laminations) are simply stacked in orderly large piles without regard to leaving any space between individual sheets. The resulting stack is unusually difficult to heat treat, having essentially the mass of a solid block, perhaps several feet thick, and the poor heat conductivity of a series of separate sheets. Notwithstanding the difficulty however, the heating must be thorough and uniform all the way through the stack. In other words, the temperature at the end of the heat must be the same in the center of the stack as at the outer edges if the proper results are to be obtained. These difficulties are common to those of box annealing in any sheet mill.

For annealing, silicon steels are heated to a temperature of 725 deg. C., (1337 deg. Fahr.) held at that tem-

perature for about two hours, and then cooled relatively slowly to about 150 to 200 deg. C. The so-called standard steel is heated to 750 deg. C. and held for about four hours before cooling. Grain structure before and after the process, is as shown in the photomicrographs.

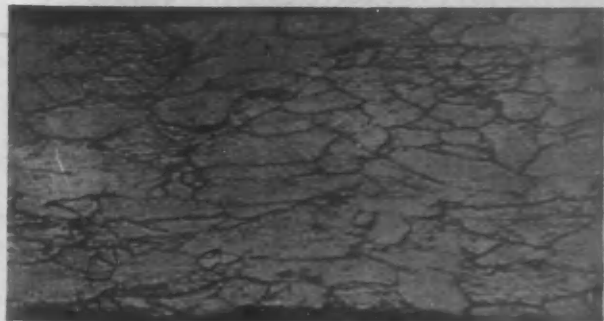
## Old Method of Annealing

Before the installation of the electric furnaces now used, all of the magnetic steels were annealed in oil-fired furnaces. Sheets were carefully packed into steel boxes to protect them from oxidation by the furnace atmosphere. Many of these boxes were commonly stacked about the furnace. A sand sealed lid covered the box and excluded air from the sheets during the anneal. Four of these boxes usually constituted a load for one furnace.

The disadvantages of this method of annealing were many and serious, the worst being the unsatisfactory results obtained, and the excessive cost. It was found to be practically impossible to get proper uniformity of temperature throughout the material in the boxes, and as a result much of the steel was found defective. Samples were taken from each box after the anneal, and where they showed up unsatisfactorily the entire box was reannealed. This retreatment averaged about one box load out of every eight.

Furthermore the sheets annealed in the oil furnace had a tendency to stick together. Large stacks of sheets had to be broken apart before any further work could be done on them. This not only required considerable time, but ruined many sheets, as the workmen would often bend or tear them beyond recovery.

Also the fuel consumed in these furnaces was excessive, not only because of the inherent inefficiency of furnaces of this type, but also because of the weight of the boxes required for containing the sheets. Each box weighed 2½ tons empty, whereas its useful load of sheet steel weighed only 3½ tons. Over 40 per cent of the energy reaching the boxes was therefore wasted in heat-



Grain Structure of a Silicon Steel Sheet, Before and After Annealing. Magnification 100 diameters

\*Industrial department, General Electric Co., Schenectady, N. Y.



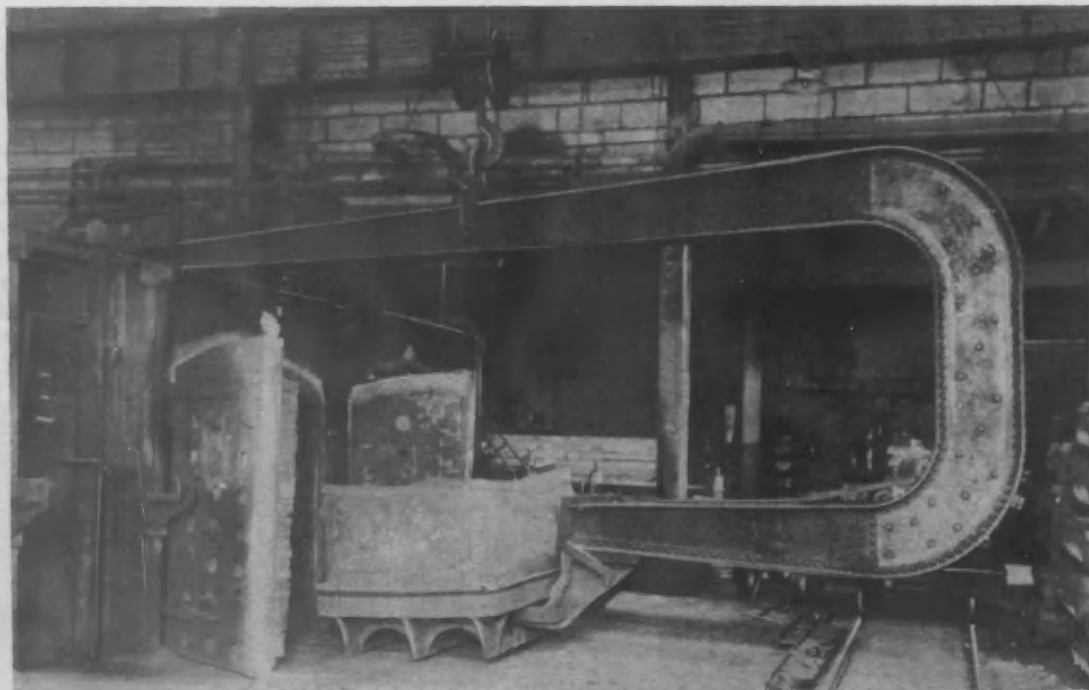
Oil Fired Furnaces Formerly in Use in General Electric Plant. Note extra space and investment required for annealing boxes and stools

ing the boxes themselves. Then, too, the cost of the periodical replacement of boxes became a very important item; actual figures on this will be given later.

It is obvious that the area covered by the oil furnaces was really the smaller part of the total floor space required for the annealing process. A large number of

boxes were continually kept on hand, stacked about the furnace in every available place, to provide empty containers for the new work and to allow the heated work to cool outside of the furnace.

Heat losses from the furnace together with the heat from the cooling boxes united to make the room where



Charging Peel, Operated from Shop Crane, Used to Place Pot Load of Transformer Iron in Old-Style Annealing Furnaces

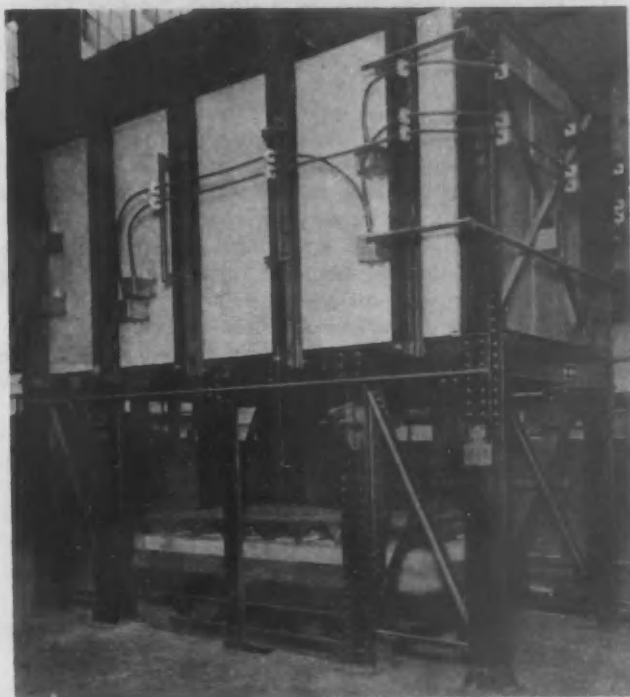
the annealing was done insufferably hot, particularly during the summer months.

#### Annealing with the Electric Furnace

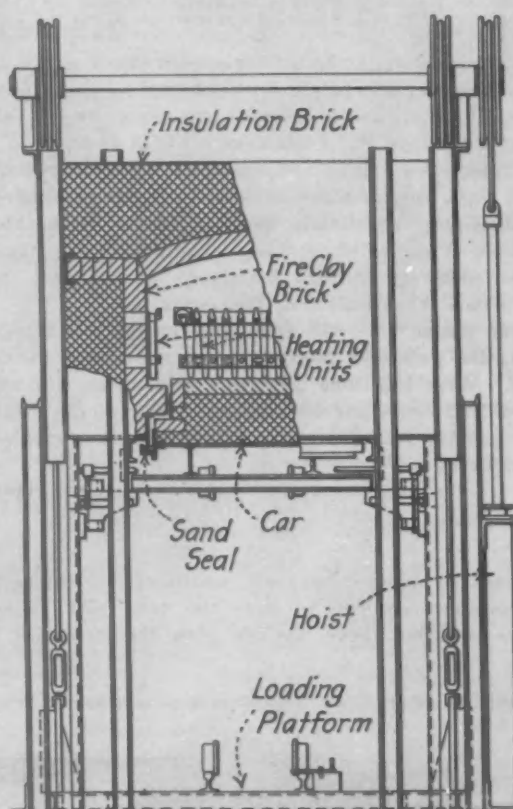
These oil fired furnaces for annealing laminations have now been entirely replaced by elevator type furnaces such as the one shown in one of the cuts. These furnaces are electrically heated, and are filled with non-oxidizing gas which is a mixture of 15 per cent hydrogen to 85 per cent nitrogen. This artificial atmosphere not only prevents oxidation but actually *reduces* oxides which are already present when the steel enters the furnace. Therefore the steel sheets come out of this furnace clean and with absolutely no tendency to stick together. A slight flow of gas at slightly greater than atmospheric pressure is kept moving through the furnace at all times to insure that

The furnace shown holds approximately 15 tons of steel, stacked 30 in. high upon a car having a series of metal hearth plates which measure 57 in. wide by 127 in. long.

Heat requirements, measured by the connected load of this furnace, is 240 kw. at 550 volts, 3 phase. An average load is brought to heat 12 to 18 hr., the actual time required depending on the final temperature, the weight and kind of material being heated, and how the work has been loaded. The load is then "soaked" in the furnace for 2 to 4 hr. to insure absolute temperature uniformity throughout the stack. Since very slow cooling is not essential to give correct magnetic properties, the loaded car is then removed from the furnace and placed under a non-insulated steel cooling hood, where it cools to between 150 and 200 deg. C. in approximately



**S**IDE View and End Section of Electric Furnace for Annealing Stator and Rotor Punchings. The empty car body is shown under furnace; in the drawing the car body is elevated to form the bottom of the heating chamber



no oxygen will find its way in. There is little danger, however, of producing an explosive mixture in the furnace because of the diluted condition of the hydrogen.

The general construction and internal features of such a furnace are shown by the drawing. The furnace proper is raised several feet above the floor; in fact, sufficient clearance is allowed for a fully loaded car to roll under on the tracks provided for that purpose. The entire car carrying, with its load, is hoisted into the opening at the bottom of the furnace by a hydraulic or motor operated lift. A gas-tight seal is provided around the bottom of the furnace opening by inserting the edge of a steel plate into a trough of sand.

Heating units are arranged around the sides of the furnace chamber, low resistance terminals coming through sealed bushings in the walls. The furnace chamber is lined with fire brick, and the space between that chamber and the outside steel shell is filled with insulation.

24 hr. This cooling hood is kept filled with the same mixed gas used in the furnace to prevent oxidation, and by the time the steel is removed from this protecting atmosphere it has reached a temperature where but very little oxidation takes place.

Several cars are provided for each furnace so that one can be cooling under the hood, another heating in the furnace, and still others being loaded and unloaded. Obviously this results in a great saving of time and floor space. The use of the cooling hood also results in a saving in power, since it obviates the necessity of cooling the work in the furnace. This not only saves the power necessary to reheat the furnace, but makes it possible to insulate the furnace thoroughly and still get a short cooling time.

Efficiency of the insulation is shown by the following experiment: One-third of a load of standard steel was heated to 765 deg. C., power turned off, and the furnace allowed to cool with the charge inside. Forty-six hours

later the temperature had dropped to 630 deg. C., a cooling of only 135 deg. in nearly two days.

Naturally the most important things sought for in a new annealing process are improvement in the product itself, and reduction in cost. Electric annealing provided these, and more.

When the change was made from oil-fired to electric furnaces a number of tests were run to show the influence on the quality of the steel itself. Standard tests were used to determine the hysteresis loss in watts per pound of steel at a magnetic flux density of 10,000 lines, both before and after annealing in both kinds of furnaces. The accompanying table gives a summary of the results on "standard" steel.

Hysteresis Losses in Sheets (Watts per Pound)

Thick- ness, In.	Magnetic Losses Before Annealing	Where Annealed	Magnetic Losses After Annealing
0.025	2.410	Oil furnace	2.082
0.025	2.388	Oil furnace	2.062
0.014	2.515	Electric furnace in hydrogen	1.332
0.025	2.940	Electric furnace in hydrogen	1.990
0.014	2.595	Electric furnace in mixed gas	1.350
0.014	3.468	Electric furnace in mixed gas	1.455

Improvement in the higher silicon steels was not quite so marked, but 5 to 10 per cent is being regularly obtained.

In 1924 a careful record was kept on an electric elevator furnace and a car type oil-fired furnace to determine relative costs as a basis upon which to reach a decision regarding new facilities about to be installed. Both furnaces were practically new and of the same capacity; 3½ tons of sheets to the load. The electric furnace used a steel plate upon which the sheets were loaded and the oil furnace used one long box container.

The plates cost \$18 each and were good for 30 anneals; the pots cost \$400 each and were good for 50 anneals. With 3½ tons per load this makes the cost of plates 0.86 cents per 100 lb., and the cost of boxes 11.4 cents per 100 lb. The cost per 100 pounds annealed was found to be:

	Electric Furnace (10.8 kwhr.)	Oil Furnace (2.89 gal.)
Fuel.....	13.50c.	16.5c.
Plates or boxes....	0.86c.	11.4c.
	14.36c.	27.9c.

Items of labor, overhead, maintenance, interest and depreciation required to give the true cost cannot be given, but the above figures give the essential facts.

Three of these 3½-ton furnaces, having a total cost in the neighborhood of \$25,000, resulted in an annual saving of approximately \$23,000 over the same capacity in oil fired furnaces.

The advantages do not end there. Relative ease of handling the materials into the elevator furnace, the comfortable, quiet working conditions, the small floor space required for loading, heating, cooling and unloading all contribute to the saving in cost and the improvement in morale among the workmen.

Elevator type electric furnaces for annealing magnetic steel have proved entirely satisfactory in every respect. In fact, the unusual success of the installations for that purpose has resulted in one manufacturer of electrical equipment installing 25 furnaces of this kind, and the adoption of this type of electric furnace for other purposes, such as the annealing of castings, disk wheels and gear blanks. The design of the furnace adapts it particularly well to long time heating and lighter-than-air atmospheres such as hydrogen, because the opening, being at the bottom, materially reduces "door losses" and prevents the escape of gas.

If it is necessary to anneal without scale it will be found that it is not necessary to substitute an atmosphere such as hydrogen. The reason is that the steel being heated contains considerable quantities of gases, which are liberated during the annealing process, so that the resulting electric furnace atmosphere is in fact, reducing.

Summing up, the advantages over the old method by the use of elevator furnaces for annealing magnetic steel and other materials are as follows:

Marked improvement in annealing results.

Reduction in annealing cost per ton, because there are no pots to be heated, and the cost of pots, as well as the labor cost for handling them has been saved.

Possibility of heavier loading, and reduction in annealing time which results in greater output for a given area of floor space.

No oxidation or sticking of sheets because of the nature of the atmosphere in the furnace.

Improvement of working conditions around the furnace resulting from the elimination of noise and gases in the atmosphere, and the reduction of heat losses from the furnace.



ONE of the attractive exhibits at the National Metal Exposition in the Public Auditorium, Cleveland, Sept. 9 to 13, was that of the Gray Iron Institute, Inc. The products of a number of members of the institute were displayed, as shown by the illustration, and the booth was visited by many of those in attendance. It was a testimonial of the rapid expansion of the Gray Iron Institute and concrete evidence of the work which it is doing.

# Fire Protection and Prevention

## Methods of Precaution to Limit or Avoid Losses, Interruption to Business and Diverting of Markets

BY A. H. RODRICK\*

**D**ESTRUTION of a factory building from fire not only means unemployment for the workers, but often involves a loss to the employer of his most valuable employees, who obtain other employment during the period of reconstruction and never return. The owner obviously suffers a further loss due to the cessation of business, unless he carries Use and Occupancy insurance.

Losses due to stoppage of production, disorganization of business and delay in filling orders, as well as the loss of customers who, like the workers, seek other business connections and are never regained, cannot be covered by insurance. When fires are frequent the insurance cost of protection is greater.

It is a subject to which every industrial manager should give serious thought, and he should study it from three angles: fire prevention, fire fighting and fire regulation.

### Fire Prevention

Statistics are not available showing the percentage of fires resulting directly from carelessness, but like accidents fires do not happen; they are caused. A sure method of preventing fires is to remove the condition which is likely to result in a proximate cause.

Carelessness in the use of matches, in the handling of dangerous articles, and in the disposal or storage of combustible materials, is the primary cause of most fires. A careless act or unsafe practice or habit is the thing to be most guarded against.

If workmen handled flame with the same lack of concern as does a child a match, disastrous results would quickly follow. Some men use acetylene or gas torches in just as dangerous a manner as though they possessed the mind of a child. In many cases their apparent carelessness is due largely to lack of thoughtfulness, resulting from constant use.

A lighted cigarette is a most dangerous article in the hand of a careless man, as many men after smoking flip the burning stub, with no thought as to where it will land, or how long it may burn. During 1926 careless smoking was reported as the cause of fires involving \$37,800,000.

When acetylene or gas torches are necessary the greatest care should be exercised in their use. Red-hot rivets and highly heated particles should not be allowed to be dropped on canvas or oil-soaked material. When such

**S**O frequently is fire the result of gross carelessness that it behooves us, every so often, to take stock to determine wherein that carelessness lies and observe once again how it can best be avoided. There is much suggestion in this article which would go a long way toward preventing industrial fires and limiting their destructiveness, if the cautions sounded are properly heeded.

work is being performed caution should be used, that the dangerous articles do not come in contact with material inflammable or likely to ignite.

Workmen should be instructed that a match or cigarette should never be discarded until the flame or fire is thoroughly extinguished. The danger likely to result from a thoughtless act should be stressed, and they should be made to understand clearly that safety for themselves and others, as well as for property, is far more important than speed. Repetitive and rhythmic motion, while necessary to increased production, should not be permitted to become a

habit and thereby subordinate safe practices.

### To Avoid Spontaneous Combustion

Disposal or storage of combustible materials manifestly requires more consideration than is ordinarily given to material of a less hazardous nature. Cotton waste moistened with linseed oil should not be allowed to stand in contact with the air. Rags and cotton used by painters, as well as overalls and jumpers, should not be exposed to heat, but should always be stored in a metal receptacle. Sawdust in pans to catch oil drippings should be replaced with sand. Rubbish heaps are fire hazards and cleanliness is a requisite in fire prevention.

Spontaneous combustion is an ever-present cause for fires, and the theory of this condition should be clearly understood. Coal stored in large quantities is susceptible to combustion and its storing and piling should be conducted with this fact in mind. Soft coal should not be stored on damp spots, for dampness helps spontaneous combustion. Coal in piling should be tamped down to eliminate air spaces, and the height of the pile should not exceed 12 ft.

Storage of gasoline should be underground. Whenever trucks are being filled or emptied the danger of discharge of electric sparks should be guarded against by grounding.

### Proper Design of Buildings Helps

In constructing buildings the subject of fire prevention should occupy a prominent part in drawing up plans to guard against unprotected vertical and wall openings. The idea that a building is fire-proof is a misnomer. This was evidenced in the case of the 15-story office building of the Chicago, Burlington & Quincy Railroad in Chicago, which burned on March 15, 1922.

Every attempt should be exerted to make buildings fire-resistive rather than fire-proof. The question of

\* Industrial engineer, Washington.

arrangement of buildings to prevent fire from spreading should be considered also. The hazards in sawmills, lumber yards, etc., can be materially reduced by arrangement. As the greatest damage by fire is often due to spreading of the conflagration, thought should be given to both the exteriors and interiors of structures, to keep a possible fire localized.

Automatic fire alarms for detecting fires are advisable, and automatic sprinkler systems are most effective as to protection against spread of fire. Their installation whenever practical is economical, as the savings in insurance premiums pays for their cost within a few years.

#### Fire Fighting

When a fire does break out the situation must be faced in a calm manner, and the fire fought vigorously as well as intelligently. As in the case of accidents, many people lose their heads when they confront a fire emergency, and an excited and frenzied person is a liability rather than an asset.

Of course, the city fire department should be summoned immediately, but fires often reach an uncontrollable stage before arrival of the fire apparatus. Many such could have been restrained had they been tackled in their inception. The employer should see that his employees understand how to administer "first aid" at a blaze, just as first aid is administered to an injured or apparently drowned person, pending the arrival of a doctor.

Fire is the evolution of heat and light by combustion. It should be remembered that flame is not at all essential to the existence of a fire; it is only a part. There may be a fire without flame; bituminous coal, for example, gives more flame than anthracite coal.

The fire may smolder, and manifest itself only by smoke or smell, until the whole mass is reduced practically to ashes. Or oxidation may proceed so rapidly that the whole mass bursts into flame; in that event we have a plain case of what is ordinarily called "spontaneous combustion." To extinguish a fire of this character in a coal pile, the coal must be removed from around the burning part and spread out on the ground. The burning part can then be removed or put out by water.

#### Correct Use of Appliances

In fighting a fire, the fire itself should be attacked, rather than the flame. Extinguishers should be applied, not to the flame, but to the place from which the flame comes. Employees should be instructed how properly to use fire-extinguishers, fire hose and all other first-aid fire-fighting appliances. Fires involving oil or gasoline should be blanketed, for water spreads the burning liquid.

In buildings where automatic sprinkler systems have not been installed, water barrels, buckets, hydrants, hose and chemical extinguishers are simple and effective first-aid fire apparatus. The barrels and buckets should be kept filled at all times and the buckets plainly marked "For Fire Use Only."

Fire hose is almost indispensable, and should be a part of the plant equipment in all buildings having hydrants. It should always be hung at each hydrant ready for any emergency.

#### Fire Regulations

After a fire does occur its cause should be determined by an impartial investigation, and the necessary steps taken to prevent a recurrence from the same or similar cause.

The greatest fire protection is a set of effective fire regulations. Such regulations, when drawn up, should be rigidly enforced without fear or favoritism. It is better to lose one skilled employee who disregards such protective measures than to risk the danger of loss of human life and property. Disciplinary action serves as a deterrent to

others, and is often the only means of compelling strict obedience.

It is impossible to enumerate all the hazardous acts which should be prohibited, for they differ according to the structure and situation of the industry. What would be negligible in a fire-resistive building could not be disregarded in a sawmill. A few major suggestions only can be offered, as a guide in framing such general regulations as are applicable to any kind of industry. By analogy the same suggestions would apply also to any business or other establishment not classed as industrial.

#### Avoid the Use of Matches

Because of the danger of fire from matches, the safety type only should be allowed in the plant. Whenever possible a flash-light should be used in place of matches. Workmen frequently seek a lost part in some dark spot by the light of a match; such practice should be forbidden.

If smoking is allowed, it should be confined to less dangerous places, and never permitted anywhere within one hour before closing time. This affords an opportunity to discover any smoldering fire which may be in existence prior to the time the buildings are vacated, since such a fire from this cause is likely to manifest itself within one hour.

All persons smoking should be required to deposit the cigarette, cigar or pipe remains in a metal cuspidor or receptacle filled with water. Sand as a filler for these receptacles should not be used. It is a fire preventive but, with cigarettes particularly, the stub continues to burn and the air soon becomes foul from the escaping smoke. If water is used, both the fire and the smoke are at once extinguished.

Unsafe practices of any character should be corrected as soon as they occur. Employees should be instructed at the time the dangerous practice is first noted, when it is fresh in the mind of the offender. It is then he is most likely to respond to correction. Advice and warning given in this manner are apt to be recalled in the future. Foremen and supervisors should at all times be observant of fire hazards and take the necessary steps to remove or rectify them.

If fire hose is installed it should be given a water test at regular intervals, and its condition carefully examined for leaks and breaks. A defective hose may be useless at a time when it is really needed. A red band should be painted around each post to which a fire-extinguisher is attached, and all emergency exits indicated by a red light.

#### Organizing to Fight Incipient Blazes

Fire squads should be organized throughout the entire plant, one on each floor, under the supervision of squad captains. One employee should be appointed fire marshal, whose duties would be similar to those of a safety engineer. He should conduct plant inspections in so far as fire hazards and fire equipment are concerned, and make pertinent recommendations regarding fire prevention and fire regulations. He should have charge of all fire squads. The fire marshal and squad captains should not be changed unless necessary, but the personnel of each squad should be changed monthly.

Each squad member should be assigned a specific duty to perform in case of fire, such as fire-extinguisher, fire hose, telephone city fire department, etc., and be trained to assume his post upon the sounding of an alarm. To make this effective a fire-drill should be held at least once during the period each squad is assigned to this duty, and in large buildings the remaining employees should be taught to leave in an orderly and expeditious manner. In such an organization each employee understands how to assist in fighting a fire, when called upon.

A fire-alarm system with station boxes should be in-

(Concluded on page 1074)

# Full-Automatic Bevel Gear Rougher

## Hydraulically-Operated Manufacturing Machine Cuts Four Blanks Simultaneously

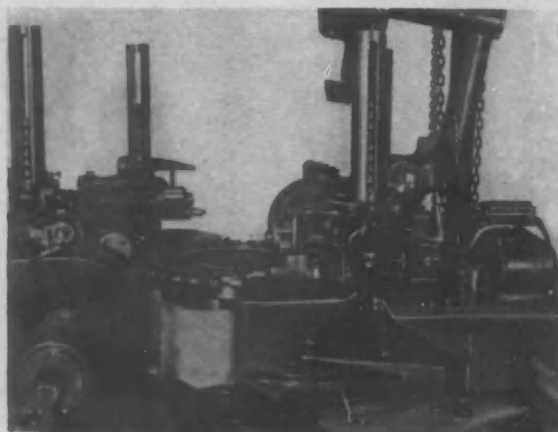
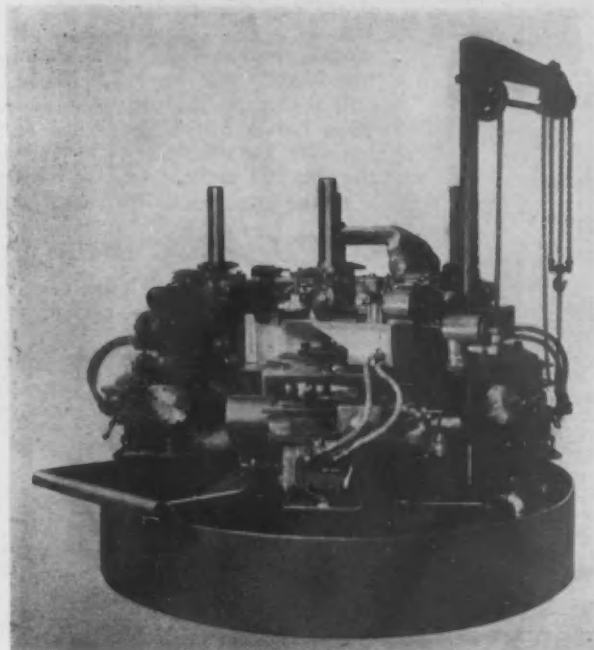
FOR large quantity rough cutting straight bevel gears of the sizes ordinarily used in the differentials of automobiles, the Gleason Works, Rochester, N. Y., has designed the four-spindle rougher illustrated. The machine is entirely automatic, the only duty of the operator being to keep the four magazines supplied with bevel gear blanks. One attendant can handle several machines,

of teeth within the range of the machine, so that it is only necessary to change index plates to cut different numbers of teeth. Travel of each work-head is controlled by adjustment of a stop dog, and the speed of movement is governed by a cam which controls the opening of the main work-slide control valve.

The time of movement of the work-head to loading position is governed

gal. per min. centrifugal pump from a 145-gal. reservoir. Lubrication of the cutter and drive spindles and of all bearings is effected by two pumps, cam-operated from the main drive piston. Chip deflectors attached to the saddle housing direct the chips to the skirt surrounding the cutter. The control column that carries this skirt is provided with a circular floor of steep pitch so that the cut gears, oil, and chips slide down the chute into a pan, where they are separated.

Loading of the magazine is facilitated by use of a loading bar on which the blanks are assembled. About 20 gear blanks are carried in each magazine.



**FOUR** Bevel Gears Can Be Roughed Simultaneously. The machine is fully automatic, the only duty of the operator being to keep the magazines supplied with blanks, which permits one attendant to handle several machines. Based on cutter speed of 115 ft. per min., the cutting time per tooth ranges from 4.5 to 30 sec.

which feature minimizes labor costs.

With the exception of the cutter drive, the entire machine is hydraulically operated. Four blanks can be cut simultaneously; these are mounted on four independent work-heads arranged around the cutting tool, which is a 20.8-in. diameter disk milling cutter having 32 inserted blades.

Each work-head is adjustable to set the work to the proper root angle and cone distance. In operation, each work-head is fed into the cutter to cut a tooth slot in the blank, and is then moved away to permit indexing. After all the teeth are cut, the work head backs away from the cutter approximately 5 in. to the loading position; the cut gear is pushed off the arbor automatically and a new blank is taken from the magazine by an automatic loading mechanism, placed on the arbor and clamped in position. The head then returns to the operating position and the cutting and indexing cycle is repeated. An automatic safety control prevents starting of the feed movement in case the blank is not properly placed on the arbor.

The index mechanism is of the notched-plate type. Movement of the piston which controls the indexing operation is constant for all numbers

by an adjustable control device, which can be set for gears of any number of teeth from six to 30. As the work-head slide moves away from the cutter after cutting each tooth, this control device is indexed one notch; when the last tooth is finished the control device trips to swing the work-head slide trip-dog out of the way, permitting the main piston to run back to its extreme position for loading. The control device resets itself automatically.

The loading operation is controlled from a series of valves cut into a single drum, so that it is impossible for the various operations to get out of time with each other.

Work-heads are entirely independent of each other, and any one of the four heads can be in operation at one time. In many cases, several different gears or pinions may be roughed satisfactorily at one time with the same cutter. The cutter is placed and removed by means of a crane and chain hoist, arranged as shown. Four supply pipes convey coolant to the cutter at the cutting positions, and the arrangement is such that when the cutter guard is swung up to permit access to the cutter, the coolant supply is automatically shut off. The cutting oil is supplied by a 45

The machine is arranged for built-in motor drive, a 10-hp. motor being employed. It occupies floor space of 85 x 103 in., and weighs approximately 12,000 lb., net. Specifications are, in part, as follows:

Capacity: Largest pitch, 3 D. P.; maximum and minimum feed movement of workslide, 1 in. and  $\frac{1}{8}$  in., respectively; largest pitch diameter that can be cut, 4 in.; greatest and smallest pitch angle, 65 deg. and 25 deg., respectively; and greatest adjustment of work-head, parallel to feed slide,  $3\frac{1}{2}$  in. The speed of the cutter head ranges from 21.2 to 95.5 r.p.m., or from 115 to 520 ft. per min. Based on a cutter speed of 115 ft. per min., the cutting time per tooth ranges from 4.5 to 30 sec.

Workmen's safety committees obtain the best results when their real purpose is the placing of responsibility for developing a preventive attitude among workmen, states the Safety Service of the Policyholders Service Bureau of the Metropolitan Life Insurance Co., New York, in its bulletin, "Workmen's Safety Committees," which is the fifth in a series on industrial safety. The booklet outlines the methods of organizing and conducting safety committees.

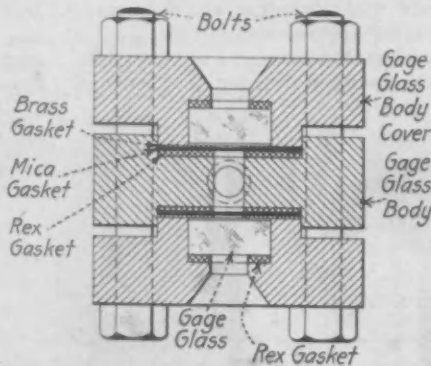
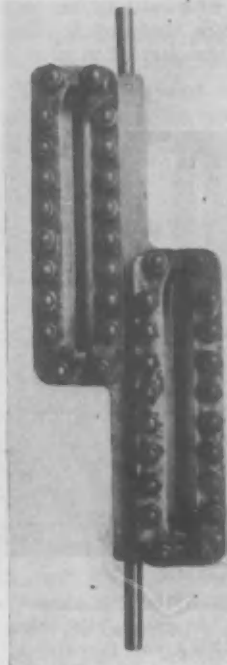
## Water-Gage for High Pressures

### Unusual Construction Needed to Withstand Physical and Chemical Forces—Packing Was a Problem

WITH the high pressures of some of the latest steam power plants, experience shows that satisfactory service cannot be obtained from tubular water-gage glasses. With

then a bar of glass about 0.7 in. thick.

When the parts are bolted together, which, as the half-tone shows, is done very thoroughly, only the boiler pressure can come on the glass, which is



**E**XTRAORDINARY Precautions Are Needed in Water-Gages for Heavy Steam Pressures. As shown, there are two glasses, one each side, and several gaskets are used

boilers operating at pressures over 350 lb. to the square inch the life of such glasses was found to vary from a few hours to about 6 weeks. The Babcock & Wilcox Co., New York, discovered that pure feed water at pressures above 350 lb. have a chemical action on the glass. Furthermore, even were the strength unimpaired, it is quite difficult to avoid breaking the glasses, when packing them for a pressure of 600 lb. and upward.

Flat, plain or fluted gage glasses were found to be better for such high pressures. Even here, however, deterioration from the action of the water and difficulty in packing them render them unsatisfactory. Double flat glass protected on the water side by mica was tried and found successful up to about 600 lb. pressure. Above that, however, it was impracticable to pack it steam-tight without breaking it.

To meet the high-temperature and high-pressure conditions a new type of gage-glass, as illustrated, was developed by the Babcock & Wilcox Co. This is said to have given satisfactory service under pressures up to 2000 lb., above which it has not been tested. The body comprises a central holder and two covers, each slotted vertically.

In the recess in each face of the holder is first placed a gasket, then a sheet of mica and on that a thin brass gasket. In the recess of each cover is first placed a gasket and

protected from chemical action by the sheet of mica. The thin brass gasket seals the edge of the joint between the cover and the glass. In service the glass has been found to last indefinitely, but the gaskets and mica need renewal every month or six weeks.

Two fittings at different elevations are used on the same water column, when considerable difference in water levels must be indicated.

### Hydraulic Control Device in Place of Solenoids

**A** HYDRAULIC operator intended to take the place of large alternating or direct-current magnets and solenoids has been brought out by the General Electric Co., Schenectady. The device is also offered for use in place of air cylinders where quiet and smooth upward thrust is desired through a given distance.

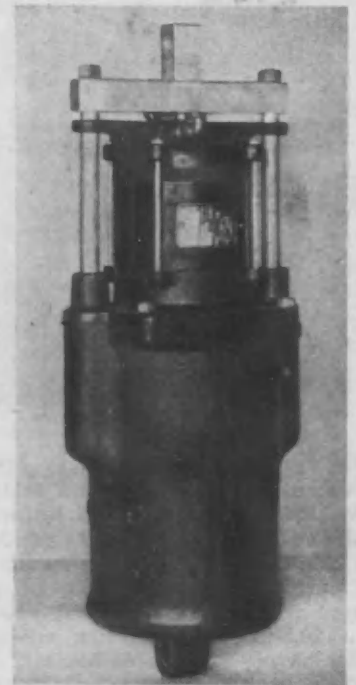
It consists of a motor-driven centrifugal oil pump, the impeller of which is mounted in a piston and driven by means of a spline shaft. This arrangement permits the stationary mounting of the motor. The normal position is with the piston at the bottom of the cylinder which is approximately two-thirds full of oil. When energized the motor drives the impeller, creating a pressure between

bottom of the piston and bottom of the cylinder.

The piston is cast so that the oil is fed to the center of the impeller from both the top and bottom. The oil is forced from the end of the impeller blades through ports to the space below the piston. The pressure tends to move the piston upwards and it will travel the full length of the cylinder provided the load on the ends of the push rods is not too great.

The operators are rated on the stalled thrust basis; that is, the number of pounds they will balance when the motor is running at full speed. The three standard sizes give 200, 300 and 600 lb. push. The speed of operating is somewhat slower than that of a solenoid. The  $\frac{1}{4}$  to  $\frac{1}{2}$ -hp. motors used come up to speed in approximately 0.1 sec. The time required to raise the piston will depend upon the diameter and speed of the impeller, the diameter and length of the cylinder and the load to be lifted.

In the largest size without load the



Hydraulic Operator for Use in Connection with Brakes, Clutches, Spot Welders, Pumps and Other Places in Which Solenoids and Air Cylinders Are Used

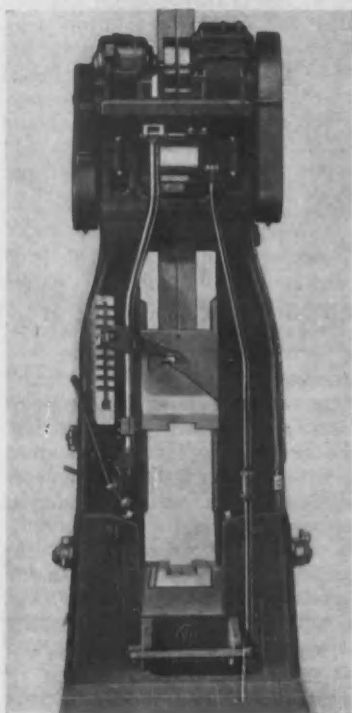
piston will travel 6 in. in 0.45 sec. With 300 lb., or half load, it will start in 0.35 sec. and complete the travel in 0.85 sec. With maximum or stalled thrust load, 600 lb., it will not move at all or very slowly. Due to the stored energy in the revolving parts the downward movement does not start until 0.3 sec. after the motor is de-energized, and that is with maximum load. Since the oil must be forced back through the revolving impeller blades as dashpot action results, it requires 0.8 sec. for the total downward travel.

The device can be applied to brakes, clutches, door and window openers, spot welders, and pumps.

## Drop Hammers with Motor-Driven Rolls

Roller-Bearing Equipped, Compact and Balanced Drive  
Claimed to Reduce Wear and Increase Output

**D**ROP hammers featuring individual motor drive for both front and rear friction rolls have been brought out by the Billings & Spencer Co., Hartford, Conn. The machine is designated as the model G, and is built in nine standard sizes, ranging from 1000 to 3000 lb.

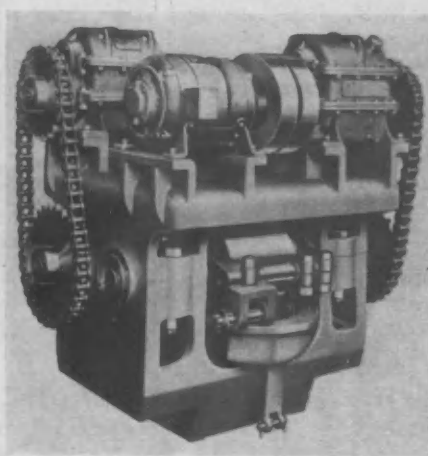


Compactness and balance are features of this drive, which, in eliminating whip and pull of long horizontal belts, is said to prolong board life and markedly reduce wear on guides and other parts. The motor for each roll is connected by a flexible flywheel coupling to the helical gear speed reducer, from which the power is transmitted by chain and sprockets. Both motors are tested to run at synchronous speed, and are controlled from one push-button station. Hyatt solid inner and outer race, sealed roller bearings are used throughout the driving mechanism.

The head casting rests directly on the uprights, and the latter are held securely to the lower section of the head by heavy horizontal tie bolts. Springs located in pockets in the uprights take the shock from the tie bolts. The head carries counterbalanced cast-steel eccentrics, which are made unusually long so that the roll spindles may be mounted in long roller bearings. The roller bearings are separated by spacers, ample allowance being made for lubricant, which is applied by grease gun through Alemite fittings. Eccentric arms clamp on a large alining pin. The rolls are shrunk on to the spindles, and both rolls and spindles are ground so that

the bearing will be smooth and the rolls will not rough the boards.

Board clamps are carried in a floating frame below the rolls, the same as in the company's model F hammer. Roll and clamp adjustments are made from the floor, at the rear of the hammer. Guides are of double-vee type,



**F**RONT and Rear Friction Rolls Are Equipped with Individual Motor Drives. Each motor is connected by flexible flywheel coupling to a speed-reduction unit, from which the drive to the roll is by chain and sprocket. High production is claimed for the machine

and are arranged so that the lower section may be removed conveniently and reversed or replaced without removing the ram or other parts.

To permit greater adjustment for various thicknesses of dies, the knock-off has been modified. A bolt and latch that slide in parallel holes in the left-hand upright has been provided, the latch being adjustable so that a late knock-off for thin dies is secured by sliding it to the right and an early knock-off for thick dies by sliding it to the left, or, in other words, varying the amount the latch projects under the friction bar dog. All adjustments are in plain view and may be made conveniently. The latch extends under a dog on the friction bar and is held up when the ram is falling. A safety latch is also provided. The friction bar is practically straight and when released falls vertically.

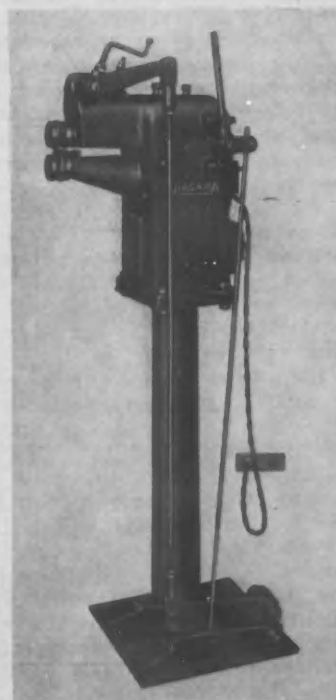
The bearing between the uprights and base is of larger area than in previous models and the upright has oil holes so that a film of oil may be maintained over the bearing area. No part of the treadle mechanism extends to the rear of the hammer, thus leaving the rear free for forgings. The hammer treads with ease, due to the toggle joint mechanism of the board

clamp. Production from the model G drop hammer is said to exceed that of any previous model built by the company.

## Sheet Metal Finishing Machine

**G**ENERAL operations on sheet metal, such as burring, turning, wiring, crimping, beading, slitting, flanging and elbow-edging, can be performed on a new electric combination machine, No. 172, made by the Niagara Machine & Tool Works, Buffalo. It will handle sheets up to No. 18 gage and is run by a ¼-hp. motor, built in and taking current from a lighting socket.

Features of the machine include a frame design that houses the motor and incloses all gears and clutch parts. The clutch of special design gives quick control by hand lever or foot-treadle. It can be locked for continuous operation. A switch on the machine provides for over-load protection. Ball bearings are fitted to the drive shaft and intermediate



Flexibility in Operation Is Had by Use of a Variety of Forming Tools

shafts while the roll shafts are bronze-bushed.

Motion of the upper shaft is controlled by combination crank screw and foot-treadle. Either of these operates independently, without removing or adjusting the other. Lateral adjustment of the upper shaft is made from two knurled screws.

The Bantam Ball Bearing Co., South Bend, Ind., is building a roller thrust bearing 39 in. in diameter for use in a special boring mill.

# Mileage Rate Case Stirs Controversies

Buffalo Producers Oppose Reopening, While Philadelphia Interests Claim Proposed Tariffs Are Too Low

WASHINGTON, Oct. 15.—Sharp controversy has developed over the request made of the Interstate Commerce Commission by the Eastern railroads for a reopening of the general Eastern iron and steel rate case. The case, decided under the Hoch-Smith resolution, prescribes a completely new rate based on mileage scales, throughout Official Classification territory. The railroads, as pointed out in THE IRON AGE of Oct. 10, page 983, raised five primary objections to the decision, among them the scales established, which were declared to be too low; the port differential relationships provided; routes to be followed and the New York harbor arbitrary of 2c. per 100 lb., etc.

Most of reply briefs vigorously oppose reopening of the case and make pointed attacks on the position of the railroads. Port authorities of New York have complained of the arrangement of differentials. Northern towns in New Jersey have objected to the relationship given as associated with New York. Philadelphia commercial organizations have gone on record before the commission in support of the views of the Eastern railroads that the level of rates prescribed is too low and have joined with the carriers in asking for reconsideration of the case. They also urge that the fourth section (long-and-short-haul) requirements are detrimental to Philadelphia interests.

On the other hand, strong protests against the reopening of the case have come from various affected sections, and the Baltimore Association of Commerce has opposed an attack on the differentials set up. One of the sharpest briefs in opposition to reopening of the case was filed by Edgar E. Clark, Wilbur LaRoe, Jr., and Frederick E. Brown, Washington attorneys, in behalf of Buffalo producers, including the Buffalo Bolt Co., the Donner Steel Co., the Seneca Iron & Steel Co., and the Wickwire-Spencer Steel Corporation. The reply petition filed for the Buffalo interests bluntly stated that the request of the railroads was entirely without merit.

The carriers' claim of a loss of \$2,500,000 in revenue from the proposed scales was declared to be misleading because of the failure of the railroads to indicate "the enormous gains in carrier revenue during the last few months." It was pointed out that reports of the carriers showed that in the first seven months of the present year the net railroad income of the petitioning carriers was \$63,173,000 greater than the net in the corresponding period of 1928.

"This makes the alleged revenue loss appear inconsequential," the reply brief stated. "The alleged revenue loss is but a drop in the bucket compared with the hundreds of millions in gain in carrier earnings,

both gross and net, since this investigation was instituted."

The point made by the railroads that the rates are too low was declared to be nothing new.

"It has at all times been understood by the parties and by the commission that if the rates were established on a basis lower than full fifth class the carriers would consider the rates subnormal and depressed," the brief stated.

"It is immaterial that there will be some loss in revenue from the rates prescribed. Many of the iron and steel rates were unconscionably high. To a large extent the carriers had exacted the full fifth-class basis, which the commission finds too high. The carriers can not reasonably expect to obtain revenue increases from every investigation, although it is their strategy and their desire to produce that result."

At another point it was explained that the carriers lay considerable stress on the fact that under the commission's formula the distance between Youngstown and Detroit is 230 miles, while the shortest workable distance under the present class rate structure is 240 miles.

"This does not mean anything except that the carriers are charging 10 miles more than they should under the uniform plan approved by the commission in all other similar cases," it was declared. "How can this possibly be a ground for reopening the hearing?"

"The carriers say that 'they can find nothing in the record or in the commission's order or report which justifies or seeks to justify so substantial a revenue loss'. Railroads are proverbially unable to see a justification for any revenue reduction under any conditions. They are proverbially unwilling to admit that any rate is unreasonable. . . . Furthermore, the carriers have been guilty of indefensible discriminations because they

have maintained widely different rates on iron and steel articles in different parts of Official Classification territory. . . . If the readjustment had resulted in assessing upon the shippers additional freight charges in the sum of \$2,500,000 annually, the carriers would have been quite content."

The Baltimore Association of Commerce, through its attorney, Charles R. Seal, said that the Hoch-Smith resolution does not cover the differential adjustment about which New York has been fighting. It was contended that equal distribution of the burden of the transportation charges, provided for in the resolution, cannot be effected if the differentials are preserved as between New York and Baltimore. The petition for reopening of the case, Mr. Seal said, should be denied. He took occasion to add that none of the railroads serving Baltimore has joined in that part of the petition dealing with the differentials.

## Railroads Extend Export Rates on Steel

WASHINGTON, Oct. 15.—Existing export rates on iron and steel products are assured until March 31. Eastern railroads last week filed tariffs with the Interstate Commerce Commission extending the current schedules which expire on Dec. 31. The fact that the railroads changed their policy by continuing the tariffs for a period of three months instead of six months, as was their practice for more than two years, has excited some comment.

The view prevails that the purpose of the new plan is to keep more immediate control over iron and steel export rates than heretofore because of the entirely new domestic steel rate structure in official classification territory, which the commission has proposed for application on Dec. 20. This is the so-called general Eastern steel rate case, decided under the Hoch-Smith resolution, a case that the railroads have asked the commission to reopen with both opposition and support from the different sections of the affected territory.

## Production, Shipments, Orders and Consumption

	August, 1929	July, 1929	August, 1928
Steel boilers(a), orders, number..	1,881	2,054	1,647
do. do., sq. ft. . . . .	1,789,989	2,083,449	1,457,000
do. eight mos., No. . . . .	12,640	.....	13,117
do. do., sq. ft. . . . .	13,617,290	.....	11,963,933
Babbitt metal(a) consumption, lb.	5,432,597	5,360,711	4,755,662
Electric power production(b), millions kwhr. . . . .	8,259	8,014	7,485
do., by water-power.....	2,840	3,055	.....
Petroleum(c), bbl. . . . .	92,288,000(d)	91,327,000	77,829,000
do., eight months(c), bbl. . . . .	671,730,000	.....	589,623,000
Gasoline(c), bbl. . . . .	38,510,000	37,855,000	33,937,000
do., eight months(c), bbl. . . . .	282,943,000	.....	.....
Steel furniture orders(a).....	\$2,417,725	\$2,559,991	\$2,619,234
do., eight months(a).....	23,030,821	.....	23,805,872(d)
Steel shelving orders(a).....	931,468	939,057	863,422
do., eight months(a).....	8,210,454(d)	.....	6,138,547

(a) United States Department of Commerce.

(b) By public utility power plants; figures from United States Geological Survey.

(c) United States Bureau of Mines.

(d) Highest ever recorded.

# Ohio Foundrymen Thresh Out Problems

Association Holds Regional Meeting—Inadequacy of Profits  
Deplored—Improvement in Practices Outlined

**P**ROBLEMS of the foundry industry, particularly those relating to making a fair profit on castings and the substitution of rolled steel for gray iron castings, were discussed by the Ohio Foundries Association, Inc., at the ninth annual meeting, held in Toledo, Oct. 10. Closer cooperation was urged to eliminate profitless competition.

Held at the Toledo Yacht Club, the meeting started with a luncheon, which was followed by talks, discussions and a business session that lasted through the afternoon. This was the first meeting to be held under the association's new plan for having four or five one-day meetings in different sections of the State, during the year, instead of one two-day annual meeting. That the plan will work out satisfactorily was indicated by a good attendance, the registration being close to 100. C. C. Smith, Toledo Steel Casting Co., president of the association, was in the chair.

Don McDaniel, Hamilton Foundry & Machine Co., Hamilton, was elected president for the ensuing year. George Alten, Alten's Foundry & Machine Works, Lancaster, was elected vice-president. Charles L. Seelbach, Forest City-Walworth Run Foundry Co., Cleveland, was reelected treasurer. Five new members of the Board of Administration were elected: George Alten; A. H. Kramer, Advance Foundry Co., Dayton; J. H. Bruce, Bowler Foundry Co., Cleveland; D. I. Miller, James B. Clow & Sons, Coshocton; and P. S. Horton, Wilmington Casting Co., Wilmington.

## Profits of Foundries Too Low

The foundry industry as a whole does not make sufficient profit, declared M. L. Robinson, director of core oil sales, Werner G. Smith Co., Cleveland, in a talk on "What Has Become of the Foundrymen's Share of the American Dollar." Mr. Robinson listed nine reasons for the failure of foundries to make fair earnings. They were:

1. Lack of definite knowledge as to costs. As a remedy he urged the adoption of a uniform cost system.
2. Improper selling methods and unrestrained and unintelligent competition.
3. Failure to study customers' needs as well as failure to stress quality and service and not charging high enough prices for quality work.
4. Encroachments of other materials.
5. Taking tonnage lots at no profit.

6. Naming a flat price on all classes of castings.

7. Unwillingness of labor to give a fair day's work that will permit the employer to compete with other foundries having better labor conditions.

8. Lack of cooperation by the foundries, which places a foundryman at the mercy of buyers of castings and of competitors.

9. Lack of organization needed to enable the industry to articulate in the face of organized minorities.

Mr. Robinson emphasized the need of cooperation to improve conditions in the foundry industry, and spoke of the efforts being made by various other industries to cooperate through associations. In this connection he exhibited a number of newspaper clippings showing what some other industries are doing along cooperative lines to protect themselves and make a living profit.

Commenting on Mr. Robinson's talk, the chairman said that for a period of five years the earnings of 42 steel foundries were less than the money invested in their plants would have earned if put in banks at 3 per cent.

## Improved Practices Outlined

Advances in foundry practice were discussed briefly by E. J. Lowry, consulting metallurgist, Detroit. The gray iron foundry industry is growing, but not to the extent of the other branches of the industry, he said. He held that the reason this is lagging behind is that the gray iron foundryman does not advertise his product.

Developments in the foundry industry have been fairly rapid the past four years, according to the speaker. Tensile strength of gray iron castings has been increased by melting at the proper temperature and by the addition of alloys. One foundry, he said, is producing castings with a tensile strength of over 60,000 lb. per sq. in.

Strength, hardness and ductility are needed in good castings. An analysis of these physical properties should be included in specifications. If alloys are used there should also be alloy specifications. The speaker pointed out that developments in the foundry industry have been in several directions. One has been the testing of sand. The sand problem is not very difficult. If the foundryman gets proper permeability and proper bond, good castings will be produced, and that is what the foundryman is interested in.

## When Hot-Blast Cupolas Are Useful

With hot-blast cupolas there is a marked saving in coke. These have

been operating with a coke ratio of 16 to 1, although the usual ratio is about 14 to 1. Whether the hot-blast cupola is applicable to a foundry depends on its size. If it is melting 50 tons or more a day, the hot-blast cupola can be used, but if only 10 tons is being melted, it is not applicable.

Temperature control is becoming a matter of importance in the foundry, he said, and market conditions are changing. Changes in flask and core equipment are working changes in production. The speaker believed it would be better for foundries to buy scrap according to definite specifications. Scrap may run 1.25 to 3 per cent in silicon. As a result, every ladle may vary in silicon content and good machineable castings may not be produced.

He said that the manufacture of pig iron in small pigs, as made by one Central Western furnace, is to the advantage of the foundry and that another has increased the uniformity of its product by tapping its blast furnace into large ladles.

## Substitutes for Iron Castings

In the discussion B. D. Fuller, Cleveland, spoke of the loss to the foundry industry of many castings for various parts that are now made of rolled steel. These included highest specialties for the automotive and other industries, for parts demanding strength and high-speed machineability.

Mr. Lowry attributed the substitution of steel for cast iron in many cases to the fact that the former has been properly advertised. Steel is no more uniform than cast iron, he said. Much work is being done in developing cast iron and in determining its qualities. When completed, some rather startling facts are likely to be brought out as to what cast iron will do. Engineers, he said, rate cast iron at a tensile strength of 15,000 lb., although test bars have been made with a tensile strength as high as 80,000 lb.

## Apprenticeship Systems Urged

Closer cooperation between foundries and the public schools in working out apprenticeship systems was urged by Carl Cotter, director of vocational training, Toledo public schools, in a talk on vocational education. He pointed out that the Ohio compulsory education law has increased the high school enrollment, as it keeps boys in school who might otherwise be employed in industry. The Toledo schools have a foundry

with a 30-in. cupola and other equipment and an enrollment of 45 boys in that department, but he said it is hard to persuade boys to take the foundry course.

A comprehensive apprenticeship system under which the schools are to be tied up with various industries has been prepared in Toledo, but no action on adopting it has yet been taken by the Board of Education. Mr. Cotter said that the school board would be glad to work with the Ohio Foundrymen's Association in developing plans for apprenticeship training. In response to this offer the chairman

stated that the Northwestern Ohio group of foundrymen would probably be pleased to take the matter up later.

President Smith in his annual report reviewed some of the activities of the association during the year. He said that one of the present aims is to promote a closer cooperation between pattern makers and foundrymen. He also said that work is being done with a view to effecting with other organizations a standardization of trade customs. The treasurer's report showed the association in a good financial condition.

## Illinois Steel Plans Greater Expansion

### Capacity in Chicago District Will Be Increased 2,500,000 Tons Instead of 1,500,000 Tons

THE Illinois Steel Co., subsidiary of the United States Steel Corporation, will add 2,500,000 tons to its annual capacity instead of 1,500,000 tons, as announced July 3 of this year.

Statement of this change in plans was made by James A. Farrell, president of the corporation, after a recent visit to the Illinois Steel Co. plants at South Chicago and Gary. New construction at the South Works will include 14 open-hearth furnaces, a new wide-flange rolling mill, a blooming and slab mill, two plate mills and an additional bar mill for rolling alloy steel bars. There will be built at Gary seven open-hearth furnaces, two batteries of by-product coke ovens of 70 ovens each, a blooming mill and a new strip mill.

Installation of the additional bar mill at the South Works will provide an annual capacity of 300,000 tons of alloy steel of all grades and sizes. This extension is noteworthy in view of the vast amount of work the Steel Corporation's research department has bestowed on alloy steels in the past year or two.

When the first expansion program announcement was made last July, it was estimated that the Illinois Steel

Co. was planning to increase its productive capacity by 21 per cent and that capacity in the district would be enlarged by 15 per cent. Announcement that the Steel Corporation unit will expand by 2,500,000 tons annually brings these figures to 32 per cent increase for the Illinois Steel Co. and 25 per cent for the district as a whole.

The contemplated additions will produce more than the rated capacity of the largest independent producer in the Chicago district.

### Soviet Engineers Select American Tools

Fifty-three Soviet engineers and industrial executives visited the recent National Machine Tool Exposition in Cleveland.

Mr. Markoff, vice-president of the Amtorg Trading Corporation, which arranged the attendance of the Soviet engineers, issued this statement at Cleveland:

"The reconstruction of Soviet industries on a modern technical basis, and the rapid realization of the great program of industrialization of the country have brought forth sharply the increasing importance of American machine tool production for Soviet industry. The year 1928-1929 marked

the beginning of a widespread program of construction of new industrial plants. The work of designing the first large machine building plants, especially the two tractor plants in Stalingrad and Leningrad, an auto truck plant, Amo, in Moscow, an automobile plant in Nijni-Novgorod, an agricultural machinery plant, Selmachstroy, in Rostov, was, to a considerable degree, shifted to the United States. In this work the Amtorg Trading Corporation and the groups of Soviet engineers who have come from the Soviet Union have received the earnest cooperation of many American firms.

"The Soviet engineers came to the Cleveland exposition to study carefully the newest models of machine tools and the newest methods of production. Their purpose is to select proper equipment for the new plants now under construction in their country.

"During the exposition the Soviet engineers, with the assistance of Amtorg engineers and representatives of various American machine tool builders, have gone over their specifications and drawings and have made final decisions on purchases of equipment.

"During their short stay in Cleveland the representatives of Amtorg Trading Corporation have reached agreements with 28 firms to place orders amounting to about \$1,200,000."

Mr. Markoff stated that the possibilities of export of machine tools to Russia are enormous, and that the winning of this market depends largely upon the foresight of American machine tool builders and the adoption of a more flexible policy.

Among the representatives of Soviet industrial organizations who attended the exposition were nine engineers of the Tractorstroi (Stalingrad Tractor Construction Bureau), headed by N. A. Kulikoff; eight engineers of the Autostroy (Automobile Plant Construction Bureau for Ford model car), headed by S. S. Dybetz, president of the bureau, and Mr. Isaacvitch, chief engineer; four representatives of the Giprometz (State Institute for Designing of Metal Works), headed by S. E. Weitzman, director of the Moscow division; Mr. Kuritzyn, chairman of the State Machine Building Trust; 10 engineers of the automobile producing trusts, headed by Mr. Golicoft, and five representatives of the Selmachstroy (Bureau for the Construction of the Rostov Agricultural Machinery Plant), headed by I. V. Sobolev.

The Amtorg Trading Corporation of New York, representing principal Soviet organizations, purchased during the past Soviet fiscal year ended Sept. 30, 1929, machine tools valued at about \$5,200,000. This compares with purchases amounting to only \$1,590,000 in the previous year. A total of 887 orders with 162 American machine tool firms were placed by the Amtorg during the past 12 months. The total Soviet-American trade for the past fiscal year amounted to \$149,000,000, compared with \$113,000,000 the year previous.

### Production and Shipment of Raw Materials and Finished Products

	September, 1929	August, 1929	September, 1928
Bituminous coal mined(a), net tons...	44,480,000	43,889,000	41,971,000
Anthracite(a), net tons.....	6,758,000	5,954,000	5,927,000
Beehive coke made(a), net tons.....	506,800	563,200	322,000
Locomotives shipped(b).....	75	129(c)	41
do., nine months(b).....	592(d)	.....	435
do., for export(e).....	80	.....	63
Unfilled orders, end of month(b).....	429	436	178
Whereof, for export(b).....	27	31	33
Trackwork produced(f), net tons.....	12,962	14,818	10,767
do., nine months(f).....	127,061	.....	110,712

- (a) United States Bureau of Mines.  
 (b) United States Department of Commerce.  
 (c) Largest total since March, 1927.  
 (d) Exceeds the 550 for 12 months of 1928.  
 (e) Included above.  
 (f) American Iron and Steel Institute; relates to T-rail track of 60 lb. a yard and heavier.

## Demonstrates New Munitions of War

### Army Ordnance Association Stages Spectacle with Representatives of Metal Trades Present

LATE developments in arms and munitions were exhibited and demonstrated at Aberdeen, Md., Oct. 10, at the Government's proving ground, under the auspices of the Army Ordnance Association. The association holds a meeting of this kind every fall and includes among its guests those who are likely to be called upon in a national emergency to design or manufacture war material. This year one of the participating organizations was the National Metal Trades Association.

As might be expected the demonstration was a continuous series of impressive spectacles, seeing that detachments from the ordnance department, the field artillery, the coast artillery, the air corps, the signal corps, the infantry and the chemical warfare service take part. The firing of guns, the attack on an imaginary enemy position by a mechanized ground force, attacks by aircraft and attacks on aircraft were extended into the darkness of evening.

Among interesting late developments shown may be mentioned the following:

#### Some of the New Developments

A combined wheel and track-laying chassis designed by Walter Christie, which made over 40 miles an hour speed over rough terrain and has gone as high as 90 miles an hour on a paved road. It serves as a high-speed armored car.

A light tank was shown powered with a 135-hp. 8-cylinder V standard commercial Cunningham motor. It has a 1-pounder gun of a new semi-automatic type which can fire at the rate of 40 shots a minute; combined with it is a machine gun so that the gunner has a choice of weapons depending on his target. This machine is regarded as the equal if not the superior of the older machines of greater size and weight. A company of 25 such machines is rated a fire-power per man roughly 16 times as great as any ordinary infantry company, besides which it can advance about ten times as fast and the men are protected by armor against enemy fire.

#### Bomb Tests Spectacular

A notable departure was exhibited in bombs. One lot dropped by airplanes are not put into action until they strike the ground. Then they set off a fragmentation part which rises a predetermined height and then bursts above ground. Their chief use is to spread gases and their certainty of action is independent of the height above ground of the aircraft dropping them.

One of the spectacular tests was the dropping of a 4000-lb. demolition bomb from one of the new Air Corps Curtiss Condor bombing airplanes, fly-

ing at an altitude of about one mile. This 2-ton bomb contained one ton of high explosive. It is 14 ft. long and 2 ft. in diameter and is equipped with two fuses, one in the nose and one in the tail. The fuses are so constructed that they may be set to function with instantaneous action on striking an object or so that the explosion will be delayed after impact, in order that the bomb may penetrate the desired distance before functioning. With a delay setting of a fraction of a second, this bomb makes a crater in normal soil 19 ft. deep and 65 ft. in diameter, displacing 1078 cu. yd. of earth.

#### Association Holds Short Session

At a short discussion meeting of the Army Ordnance Association, President Benedict Crowell, who was assistant secretary of war and director of munitions during the World War, emphasized that "the principal objective of the association is an active membership of American citizens, on whom the duty of design and production of munitions will fall in war, who will have an accurate and authentic knowledge of the complex requirements of ordnance. Peace insurance in this form is the foremost aim of the Army Ordnance Association."

Major-General C. C. Williams, chief of ordnance, addressed himself to the present status of munitions, touching at length on the recent experiences in welding in the construction of ordnance material and on the centrifugal casting of guns.

Harold C. Smith, president, National Metal Trades Association, spoke on "The Metal Trades and Preparedness."

#### Stock Sizes of Full Disk Buffs to Be Reduced

A general conference of representatives of manufacturers, distributors and users of buffing wheels, on Oct. 7, approved a simplified practice recommendation in which 4, 5, 6, 7, 8, 11, 13, 14, 17, 18 and 20-in. full disk buffing wheels were selected as standard stock items. This action reduces standard diameters from 17 to 11, corresponding to an elimination of 35 per cent of needless varieties. The conference also voted that 20 ply should be

adopted as the standard for stock buffs, according to the division of simplified practice of the Bureau of Standards, Department of Commerce.

The recommendation is to become effective Jan. 2, 1930, for production on the new schedule, and Jan. 2, 1931, for the elimination of current stocks of non-standard sizes.

For the standing committee the following representatives were named: Manufacturers of buffs, B. H. Divine, president Divine Brothers Co., Utica, N. Y.; Floyd T. Taylor, vice-president Hanson-Von Winkle-Munning Co., Matawan, N. J.; and E. Winthrop Hall of the F. L. & J. C. Codman Co., Boston. Users of buffs, one representative each from the General Motors Corporation, the Western Electric Co., and the Scovill Mfg. Co. Distributors of buffs, a representative of F. B. Stevens Co., Detroit. Textile manufacturers, a representative of the Cotton Textile Institute. Machinery builders, a representative of the United States Electrical Tool Co.

#### Expect to Reduce Waste

It was the combined opinion of the conferees that the adoption of the above diameters as standards would materially reduce the wasteful cutting of sheeting out of which buffs are made and at the same time reduce the cost of production and distribution. The standing committee is to give further attention to the possibilities for standardization of sewing, arbor holes, pieced buffs and polishing wheels.

#### All-Metal Airship Accepted by Navy

WASHINGTON, Oct. 15.—The Navy Department has accepted the all-metal dirigible ZMC-2. Recommendation that the ship be accepted was made by the Board of Inspection and Survey, following test trials. The contract required that the ship fly at a speed of at least 60 miles an hour. In the tests it exceeded this rate but, it is stated, it has never been flown at its maximum speed. Among tests made were those to determine the ascending and descending qualities of the ship and to ascertain whether the metal covering is gas-tight.

Accepted as an experimental type, the ship will be subjected to extensive operating tests so that data may be gathered for purposes of comparison with fabric-covered ships. It will be used for training purposes also. It is anchored at the Lakehurst, N. J., station.

MOVEMENT OF LAKE SUPERIOR ORE, IN GROSS TONS

Port	September, 1929	September, 1928	Season to Oct. 1	
	1929	1928	1929	1928
Escanaba .....	741,490	774,449	4,954,163	4,077,064
Marquette .....	671,770	590,001	3,556,660	2,568,355
Ashland .....	983,385	953,912	6,358,813	4,958,227
Superior .....	3,073,399	2,547,529	15,808,197	11,779,177
Duluth .....	3,041,587	2,941,011	17,050,529	13,469,637
Two Harbors .....	1,035,409	941,384	5,536,465	4,413,519
Total .....	9,547,040	8,748,286	53,264,827	41,265,979
Increase .....	798,754	.....	11,998,848	.....

# Ohio River Canalization Completed

Iron and Steel Can Move from Pittsburgh to Cairo, Ill.—  
Event to Be Celebrated Oct. 17

**M**OVEMENT of iron and steel and other products over the full length of the Ohio River from Pittsburgh to Cairo, Ill., will be assured the year around with the completion on Oct. 17 of the Government canalization project, which has been in progress for about 50 years at a cost of approximately \$200,000,000. The work has involved the construction of 50 locks and a great deal of dredging work which will make possible a 9-ft. stage over the entire length of the river, regardless of weather conditions.

The official opening ceremonies, which will begin at Pittsburgh on Oct. 17, will take the form of a parade of river craft down to the Mississippi, with stops at important ports such as Huntington, W. Va., Cincinnati and Louisville, Ky. Pittsburgh's part of the celebration will begin with an informal luncheon at noon, which will be attended by many notables in Government, transportation and industrial circles. The various wharf and docking facilities in the Pittsburgh district will be thrown open for inspection during the afternoon, and in the evening a banquet will be held at the William Penn Hotel.

Among those who will be in Pittsburgh for the occasion are Andrew W. Mellon, Secretary of the Treasury; James W. Good, Secretary of War; Charles Francis Adams, Secretary of the Navy; Robert P. Lamont, Secretary of Commerce; James J. Davis, Secretary of Labor; Governor John S. Fisher of Pennsylvania; Governor William G. Conley of West Virginia; W. W. Atterbury, president, Pennsylvania Railroad; Daniel Willard, president, Baltimore & Ohio; P. E. Crowley, president, New York Central, and J. J. Burnet, president, Chesapeake & Ohio.

The Ohio River canalization project

involved the construction of 50 low-lift dams, each with a lock chamber 110 ft. wide and 600 ft. available length. To prevent any increase in flood height and to permit open-river navigation when the natural depth is 9 ft. or more, all the dams except the two immediately below Pittsburgh, are of the movable type. Lock No. 1, at Emsworth, Pa., 6.2 miles below Pittsburgh, was built in 1921 to replace the old locks Nos. 1 and 2, and is of the fixed type of construction, the principal object being the elimination of the violent fluctuations of water levels in Pittsburgh harbor, which were caused by the operation of movable dams. A second fixed dam is now being completed at Deadman Island, 13.3 miles below Pittsburgh, which will replace the old dams Nos. 3 and 4. Its opening marks the completion of the project.

The main part of each movable dam, through which navigation passes when the dam is lowered, is known as the navigable pass. It is from 600 to 1000 ft. long and consists of a series of wickets or shutters, 3 ft. 9 in. wide and 16 ft. to 20 ft. long, depending on the height of the dam, each supported in an inclined position by a prop. The dam is lowered by means of a derrick boat, known as a maneuver boat, the props being released from their seats one by one, and the wickets lowered so as to lie flush with the bottom of the river. In addition to the lock and navigable pass, there are weirs of different types for the purpose of regulating the pools and facilitating the raising and lowering of the dam.

The relatively long construction period required for the dam building has been due partly to the fact that most of the work must be done within cofferdams designed to hold out the river to a stage of 16 to 18 ft. When

the river rises above this stage, work must be suspended until the water subsides. With this limitation, the working season rarely exceeded five months, or from July to November, inclusive.

Coincident with the opening of the Ohio River project, bids were opened in Pittsburgh last week for the construction of lock No. 7 on the Allegheny River, the last of the existing project on that stream. The Allegheny is under improvement by the open channel method and also by locks and dams. The work under way provides for open channel work from the mouth of the river at Pittsburgh to the New York State line, a distance of 214 miles, by the removal of boulders and snags and the construction of low dams and dikes to close secondary channels and concentrate the low water flow on shoals. By these improvements there has been established a well defined navigable channel from 150 ft. wide and about 1 ft. deep at low water at the New York State line, to about 300 ft. wide and approximately 2 ft. deep at low water at Natrona, Pa., 24 miles about the mouth. The slack water project provides for eight locks and dams, establishing a minimum slack water depth of 7 ft. by three structures to Natrona and thence of 8 ft. by five additional locks and dams to Rimeron, Pa., 61 miles above the mouth.

The existing project on the Monongahela River provides for the improvement of the stream by 14 locks and fixed dams to afford slack water navigation from Pittsburgh to a point 4 miles south of Fairmont, W. Va., a distance of 130 miles. Work under the approved project will give a depth of 8 ft. between Pittsburgh and lock No. 10, near Morgantown, W. Va., and 7 ft. for the remainder of the distance. In rebuilding the locks and dams from No. 1 to 6, the adopted standard was two parallel chambers, each 56 x 360 ft., with 8 ft. depth on sills and fixed concrete dams.

## Exports of Electrical Equipment

The Verband der Deutschen Elektrotechnischen Industrie has published a comparison of German exports in electrical equipment and appliances in 1923 and 1926. They totaled 330,000,000 m. (\$78,540,000) in 1913 and 536,000,000 m. (\$127,568,000) in 1926. Nevertheless, Germany's share of total world trade in electrical equipment was only 28.8 per cent in 1926, compared with 46.4 per cent in 1913. The United States exported 112,000,000 m. (\$26,656,000) worth of equipment in 1913, or 15.7 per cent of total world exports, and in 1926 shipped equipment valued at 448,000,000 m. (\$106,624,000), or 24 per cent of the total. Great Britain's exports were 157,000,000 m. (\$37,366,000) in 1913, or 22 per cent of the total, and 377,000,000 m. (\$89,726,000) in 1926, or 20.2 per cent of world exports.

## German Foreign Trade in Iron and Steel Products

(In Metric Tons)

Item	Exports		Imports	
	July	August	July	August
Pig iron and ferroalloys.....	57,583	45,968	12,798	11,382
Ingots, blooms and billets.....	46,885	45,228	13,785	7,142
Iron and steel bars, rods, angles..	111,134	100,228	52,114	54,621
Structural shapes .....	8,444	10,740	537	480
Hoops and bands.....	14,562	14,445	8,545	7,084
Plates and sheets.....	67,227	67,647	5,768	6,434
Galvanized sheets .....	581	2,302	291	99
Tin plate .....	2,727	1,397	2,483	1,532
Cast iron pipe.....	12,843	13,404	6,698	4,783
Wrought iron pipe.....	35,665	31,212	1,472	814
Pipe fittings .....	4,933	4,931	83	112
Rails .....	47,308	36,174	9,881	9,729
Other railroad material.....	8,728	9,350	822	1,038
Plain wire .....	35,783	35,031	9,510	6,881
Barbed wire .....	5,327	4,821	61	90
Wire rope .....	1,673	1,959	100	91
Wire cloth .....	2,153	1,433	3	4
Other wire manufactures.....	708	816	44	46
Nails, tacks, rivets and washers...	8,376	9,308	262	615
Castings and forgings.....	22,896	23,495	2,941	3,245
All other .....	5,262	4,930	1,077	1,109
Total .....	500,798	464,819	129,275	117,331

Based on cablegrams received by Iron and Steel Division, Department of Commerce, from Trade Commissioner James E. Wallis, Berlin.

## Steel Corporation's Orders Gain 244,370 Tons

A gain of 244,370 tons in its unfilled orders was reported for September by the United States Steel Corporation. This contrasts with a decrease in August of 429,966 tons which was the fourth consecutive monthly decline. The total on Sept. 30 was 3,902,581 tons as against 3,658,211 tons on Aug. 31. A year ago the unfilled tonnage was 3,698,368 tons; on Sept. 30 this year the orders are 204,213 tons larger than a year ago.

Unfilled tonnage at the end of each month for the past three years follows:

	1929	1928	1927
September	3,902,581	3,698,368	3,148,113
August	3,658,211	3,624,043	3,196,037
July	4,088,177	3,570,927	3,142,014
June	4,256,910	3,637,000	3,058,246
May	4,304,167	3,416,822	3,050,941
April	4,427,563	3,872,133	3,456,132
March	4,410,718	4,335,206	3,553,140
February	4,141,341	4,398,189	3,597,119
January	4,109,487	4,275,947	3,800,177
	1928	1927	1926
December	3,976,712	3,972,974	3,960,696
November	3,673,000	3,454,441	3,807,447
October	3,751,030	3,341,000	3,683,661

## Farm Market for Galvanized Sheets Is 1,599,533 Tons

The total annual farm market for galvanized roofing is 1,599,533 tons, whereas the present quantity of galvanized sheets going into that market is only 429,000 tons, states the current issue of *Making Markets*, published by the Sheet Steel Trade Extension Committee, Cleveland. Approximately 474,533 tons is required for new construction, the remainder being needed for replacement purposes.

## Recovery in Pig Iron Imports in August

August imports of pig iron from British India alone made more tonnage than the total in July from all countries. At 12,377 tons the gain was 84 per cent on the 6743 tons of July. The August figure showed a reduction from August last year of about 5 per cent.

For the first eight months of the year there has been a slight decline from last year—about 2 per cent. United Kingdom and British India re-

mained the leaders, as a year ago, but India has taken first place, whereas last year United Kingdom was in first position. The Netherlands has been third each year, and no country outside these three supplied as much as 3 per cent of the total in either year.

## Expansion of Interstate Mills Being Planned

F. J. Griffiths, chairman of the board, Central Alloy Steel Corporation, in submitting the third quarter earnings report of the company, stated that the work of transferring the properties and other assets of the Interstate Iron & Steel Co. of Chicago to Central Alloy is proceeding rapidly and that plans are under way for expansion of the Interstate plants.

The Central Alloy Steel Corporation reported third quarter earnings of \$1,342,974, after all charges but before dividends, equivalent to 90c. on each share of common stock outstanding. Earnings in the September quarter of 1928 were \$1,160,606, equal to 76c. a share on the common. Earnings for the first nine months of this year were \$4,667,251, after all charges but before dividends, equal to \$3.19 a share on the common, against \$3,400,965, or \$2.22 a share, on the common in the first nine months of 1928.

The Interstate Iron & Steel Co., Chicago, which, as was announced in *THE IRON AGE* of Oct. 10, will be merged with the Central Alloy Steel Corporation, Massillon, Ohio, was incorporated in 1895 and operates three plants in the Chicago district. These are an alloy steel mill at South Chicago, Ill.; a rod and wire mill at Grand Crossing, Chicago, and an iron bar mill at East Chicago, Ind.

Equipment at the South Chicago Works includes four 100-ton open hearth furnaces, four 70-ton open hearth furnaces, a 35-in. blooming mill, a 21-in. Morgan continuous billet mill, a 12-in. Morgan finishing mill and a 10-in. Morgan finishing mill. Plans have been prepared for an additional 100-ton open hearth furnace at this plant. The rated capacity at South Chicago Works is 375,000 tons annually.

Equipment at the Grand Crossing Works includes a continuous rod mill with an annual capacity of 60,000 tons. Products are wire, both black and gal-

vanized, nails, welding rods, tacks and staples. At the East Chicago Works are four three-high mills with a total capacity of 125,000 tons annually. The sizes of these mills are 8-in., 9-in., 16-in. and 22-in. The products are bar iron and steel and iron tie plates. There are also located at this works heat treating and cold-drawing departments.

The Interstate Iron & Steel Co. last year sold its rivet manufacturing business and it has also discontinued production of double-threaded wood screws.

## Alloy Steels Discussed at Hartford Meeting

At the first meeting of the season of the Hartford chapter of the American Society for Steel Treating on Tuesday evening, Oct. 8, at the Hartford Electric Light Auditorium in Hartford, Conn., the subject was "The Manufacture of Alloy Steel." It was introduced by a five-reel motion picture presented by the Central Alloy Steel Corporation of Massillon, Ohio. A representative of the company answered many questions covering the pouring of ingots, the relation between the sizes of ingots and the intended product, the causes of seams and other internal defects found in finished bars, and methods of rolling and straightening. Various types of stainless irons and their product were described.

At the next meeting, on Nov. 12, the speaker will be J. P. Gill, chief metallurgist, Vanadium Alloys Steel Co., Latrobe, Pa., who will discuss "Alloys and Their Effects in Tool Steels."

## Westinghouse to Furnish Drives for Chicago Mill

The Westinghouse Electric & Mfg. Co. has received the contract for the main roll drives of the new wide flange structural mill of the South Chicago works of the Illinois Steel Co. The value of the contract is approximately \$1,250,000.

According to the Westinghouse announcement, the equipment will include the first application of the twin motor direct drive, which is an outstanding new development in rolling mill practice. In this installation the upper and lower rolls are driven by direct-connected individual motors, eliminating the pinions and housings which are required by conventional single motor drives. The electrical equipment for the new twin motor drive consists of two standard reversing motors, each of half the capacity required for a single motor drive, a motor-generator set and the necessary control and switching equipment.

The Hill-Curtis Co., Kalamazoo, Mich., manufacturer of grinding and polishing machinery, has changed its name to Hammond Machinery Builders, Inc.

UNITED STATES IMPORTS OF PIG IRON BY COUNTRIES OF SHIPMENT (In Gross Tons)

	August		Eight Months Ended August	
	1929	1928	1929	1928
United Kingdom	3,903	2,550	31,187	37,327
British India	7,227	7,495	37,786	34,269
Germany	737	1,833	103	95
Netherlands	238	...	19,029	17,673
Canada	...	...	763	378
France	...	...	101	300
Belgium	...	...	184	202
Norway	101	321	1,441	412
Sweden	106	759	1,415	2,143
All others	65	32	572	1,541
Total	12,377	12,990	92,581	94,340

## Buyer Says Scrap Trade Must Improve Background

Cooperation of the American Rolling Mill Co. in bringing about better conditions in the scrap industry was offered to the Institute of Scrap Iron and Steel at a meeting of its Cincinnati chapter Oct. 8 by H. O. Miller, director of purchases of the steel company. Mr. Miller said:

"For the last 25 years it has been a hope of mine that the scrap iron dealers would accept the responsibility of creating a new background for their industry. Scrap is the only commodity we buy in which we need inspectors. I have been firm in the belief that the business will have to change from a speculative to a more substantial basis.

"I have been watching the institute closely and feel that it is on the right foundation to create this new background for the industry. I have read with a great deal of interest the high class publicity that has come out and the constructive work of the organization. I want to see the institute succeed, and any help I or my company can give will be given.

"We are concerned not only in keeping the good will of our sources of scrap, but in eliminating the causes which eventually mean losses to us. The dealer's loss in reshipment on account of rejected cars will eventually be made up out of our company or some other consumer. The institute can do a great deal to eliminate the causes of these losses. Brokers should inform the shippers of our specifications.

"Every scrap iron dealer in the country can afford to be a member of the institute. I wonder how many of the dealers who have already joined have done anything more than subscribe? Passive acceptance will kill the institute."

Mr. Miller was elected an honorary member of the Cincinnati chapter.

## New England Steel and Iron Jobbers' Outing

The New England Iron & Hardware Association held its annual fall outing at the Tedesco Country Club, Swampscott, Mass., on Thursday afternoon and evening, Sept. 19. It was the largest outing ever held by the organization, more than 100 members and guests attending, and more than 50 entered the golf tournament. Franklin E. Bragg, N. H. Bragg & Sons, Bangor, Me., president of the association, presided at the dinner, and introduced Harry L. Doten, president, H. L. Doten & Sons, Boston, who awarded the prizes won during the tournament.

Prizes were donated by the Central Alloy Steel Corporation, Boston; F. S. Brewer, Bourne, Fuller Co., Unionville, Conn.; Bethlehem Steel Co., Boston; American Steel & Wire Co., Boston; Peter Gray & Sons, Inc., Cambridge, Mass.; Ames Shovel & Tool

Co., North Easton, Mass.; Decatur & Hopkins Co. and Bigelow & Dowse Co., Boston; the president, Mr. Bragg; and the Standard Horseshoe Co., Boston.

Prizes were won by C. M. Doten, H. L. Doten & Sons, Boston; Murray Harvey, A. C. Harvey Co., Boston; Paul Avery, Avery & Saul Co., Boston; A. E. Carpenter, Chase, Parker & Co., Boston; R. H. Sanderson, E. P. Sanderson & Co., Cambridge, Mass.; C. C. Butts, Butts & Ordway Co., Boston; Arthur Avery, Avery & Saul Co.; W. C. Gray, Peter Gray & Sons, Inc.; Peter Gray; and J. S. Kenyon, Tremont Nail Co., Boston.

## \$2,000 for Best Industrial Advertising Campaign

Again the Harvard Advertising Awards Committee of the National Industrial Advertisers Association is announcing the annual Bok Award of \$2,000 for the best industrial advertising campaign for 1929 appearing in newspapers and periodicals. Closing date of this competition is Dec. 31.

The industrial advertiser must submit a manuscript describing the campaign, its functions, and its application, together with reproductions of the ads as they appeared and a statement of the analysis of the market on which the campaign was founded. The manuscript and the ads must be submitted in certain prescribed form, the details of which can be secured direct from Harvard Graduate School of Business Administration (Harvard Advertising Awards), Soldiers' Field Station, Boston, or from A. H. Oberndorfer, Chairman Awards Committee of the National Industrial Advertisers' Association, in care of the Sivyer Steel Casting Co., Milwaukee.

## Municipal Airports to Be Subject of Conference

Engineers and city officials of the American Road Builders' Association and members of the Aeronautical Chamber of Commerce will hold a conference on municipal airports in Washington on Oct. 24 and 25. The technical side of the program will include airport layout and planning, structures, drainage, surfaces and management. Lieutenant-Colonel U. S. Grant, III, director of public buildings and parks, District of Columbia, will deliver an address on "Airports and Public Parks," and Colonel C. M. Young, newly-named assistant secretary of commerce for aeronautics, will discuss European practices.

## A Virginia Blast Furnace Sold for Scrap

The Bigstone Gap blast furnace of the Intermont Coal and Iron Co., at Bigstone Gap, Va., which was blown out a few years ago, has been sold to Platnik Brothers, Bluefield, West Va., who are now dismantling it for junk.

## Cold-Drawn Bar Makers To Hold Conference

WASHINGTON, Oct. 11.—With approximately 70 to 75 per cent of the total production represented, the cold-finished steel bar industry will hold a trade practice conference with the Federal Trade Commission at a date and place not yet determined. It will be in charge of Commissioner C. W. Hunt. Among subjects thus far proposed are: Interference with contractual relations; defamation; espionage; price discrimination; premiums; misrepresentation; secret rebates; protection against decline or advance in price; failure to adhere to published prices and failure to maintain the validity of contracts.

The Southern Hardware Jobbers' Association also will hold a trade practice conference with the commission on Oct. 18 in Washington at the Chamber of Commerce of the United States before Commissioner G. S. Ferguson, Jr. Applications for the conference represent approximately 90 per cent of the hardware distributing industry in 14 Southern States. Among practices proposed for discussion are: Price discrimination; inducing breach of contract; misbranding; fraud and misrepresentation and secret rebates.

## Foundry Labor Looking for Higher Wages

Cutting costs in a jobbing foundry was the subject selected by F. D. Campbell, Eastern Steel Castings, Newark, N. J., for his address at the October meeting of the New England Foundrymen's Association at the Exchange Club, Boston, Oct. 9.

The working space of the plant approximates 100,000 sq. ft., the average weight of castings produced is 20 lb., as high as 6 tons of metal is put into the molds in 9 min., all the result of high concentration of appliances. The company recovers 80 per cent of its defective castings at its shake-outs, which means a tremendous saving in subsequent handling departments. Of particular interest were the illustrations which he showed of sand hoppers equipped with automatic lubricated vibrators.

Carl S. Neumann, president of the New England association, presided and first introduced A. E. McClintock, National Founders Association, who gave a brief sketch of what the foundry labor situation is and is likely to be during the next six months or so. He stated that great pressure is being brought to bear on the president of the iron molders' union to start some sort of movement to lessen working hours and increase the pay in localities not receiving \$1 an hour.

So far as can be ascertained, the foundry union intends to start next spring a general movement for a five-day week and \$1.25 an hour wage with the hope of ultimately securing \$1.10.

# This Issue in Brief

Daily production meeting helps manufacturer keep delivery promises. Orders are assigned to various departments, delivery dates are set, production record is discussed, and delays are investigated.—Page 1033.

\* \* \*

Don't pile coal higher than 12 ft., if spontaneous combustion is to be avoided. Soft coal should not be stored in damp spots. Air spaces should be eliminated by tamping.—Page 1041.

\* \* \*

Business collapse is not likely to result from stock market deflation. Industry and trade are free from inflation, says economist. No serious business depression is in prospect, if industry has not in general overestimated market requirements.—Page 1034.

\* \* \*

Cuts costs almost in half by annealing magnetic sheets in electric furnace, filled with non-oxidizing gas. Oxidation is prevented. The sheets come out clean. Stickers are eliminated.—Page 1037.

\* \* \*

If your plant burned down tomorrow insurance would not repay you for lost customers. Every industrial manager should study fire-prevention methods. Every plant should have at least one fire squad, and fire prevention equipment should be tested regularly.—Page 1041.

\* \* \*

If your foundry melts more than 50 tons daily you can save money by using the hot-blast cupola, says foundry engineer. Hot blast makes a big saving in coke. The usual ratio is 14 to 1.—Page 1047.

Determines cost of operating open-hearth furnaces with various grades of scrap. Block scrap has the highest value and de-tinned sheet the lowest.—Page 1026.

\* \* \*

Use carefully drawn stock for cold-heading and thread-rolling. If split threads occur, the wire was not drawn enough.—Page 1027.

\* \* \*

Forging furnace brick lasts longer and heat is conserved if the walls are treated with "Albany slip." Finely ground powder suspended in water is sprayed over the cold brick and left to dry.—Page 1028.

\* \* \*

Bonus for analysis control is paid steel foundry melters. Bonus is based upon a score obtained by dividing the total number of points outside the desired analysis by the total number of heats.—Page 1030.

\* \* \*

New big market for equipment and steel will result from building of passenger terminals at airports. Practically no facilities exist at present. Air depot will follow closely the methods used in modern railroad terminals, engineers believe.—Page 1023.

\* \* \*

Forging quality is not influenced by presence of dendritic structure. In the forged and heat-treated condition, no material difference can be detected in the tensile properties, so investigator concludes that the microstructure and not the macrostructure is the dominant factor.—Page 1028.

Before accepting car of scrap a 1000-lb. test heat is made, prior to unloading car. Test piece is analyzed, and used as a basis for acceptance or rejection, and also for placing the scrap in its proper bin, according to analysis.—Page 1029.

\* \* \*

Heading dies for cap screws, machine screws and rivet blanks last longer if wire is liquor-finished. The copper sulphate wash fills in seams and pores on the wire surface.—Page 1027.

\* \* \*

By glazing the walls of furnace for annealing steel castings, good heat reflection is obtained, and equality of temperature between furnace walls and contents is promoted.—Page 1028.

\* \* \*

Heat treating increases the tensile strength of cold-headed bolt blanks and refines the metal structure. Water-quenching is a good toughener.—Page 1027.

\* \* \*

Unfilled steel orders show first gain since April. Steel Corporation's balance on order Oct. 1 was 3,902,581 tons, a gain of 244,370 tons.—Page 1051.

\* \* \*

Boiler shops are working to closer limits. Rough-and-ready methods have been superseded by machine shop precision. Twenty years ago  $\frac{1}{2}$  in. out-of-round would go uncriticized. Today  $\frac{1}{16}$  in. out-of-round is about the maximum allowable.—Page 1055.

A. I. FINDLEY  
Editor

# THE IRON AGE

W. W. MACON  
Managing Editor

ESTABLISHED 1855

## How Is General Business?

CONFRONTED with a decline in steel production when the normal seasonal trend is upward, and observing that there is a wide difference in the degree of activity in various consuming lines, the steel trade wants to know what is the real condition and trend in general business. In various respects there is confusion of testimony, particularly when different periods of time are taken for comparison. Thus, while "the year to date" compared with the same period in the preceding year has usually been a favorite basis for comparison, that fails to be informative at the present time, for the real question is whether any important change has occurred recently. This difficulty is increased by the fact that last year had its parts out of proportion, the second half being unusually good relative to the first half, which would set this year's comparisons with "a year previous" awry.

As to the validity of the steel trade's own showing, that of production, there is necessarily some doubt. When June, July and August showed 25 per cent heavier production of steel ingots than the same months of last year the increase could not be accepted as a general measure. Men's habits as to working in the summer and wanting steel could not be so greatly altered. There were then belated deliveries, while there might now be a temporary reaction to the other side of the general line.

We have selected three general measures or indicators of trade at large, to see what they suggest. The comparison covers only the recent past, not a large part of this year, for the question is whether any significant change has occurred recently. It develops that check payments in four weeks, freight car loadings in four weeks and Portland cement shipments in two months show increases from a year previous, 11 per cent in check payments, 3 per cent in car loadings and 1 per cent in cement shipments. The comparison is with what may be called the better part of last year.

These three general measures make a reasonably favorable comparison. In two important activities we have a different showing. Building contracts in eight weeks decreased in value 15 per cent from a year previous. Automobile production last month was below that of a year previous, making an impressive divergence, as previous months this year had run higher than a year previous, most of them very much higher.

It is easy to give too much regard to these individual instances. There is so much income or so much capital available, and the choice of how the money is spent may easily vary from time to time. One readily recalls complaints of clothing and shoe manufacturers

that people were spending too much money on automobiles.

The decrease in automobile trade activity is measurable and it accounts for the greater part of the falling off in total steel production, while there has been a seasonal decrease in rail production that accounts for much of the remainder. It is evident that there has been no widespread decrease in the demand for steel even though the demand was exceptionally heavy earlier in the year. Many of the consuming trades must still be doing very well indeed.

## Uncle Shylock

IT is notorious that Uncle Sam, exercising his attentive hand through the medium of bureaucratic nurses, mentors and policemen, is not very good to his nephews and nieces. We even forget that he is our uncle at all, so threatening, meticulous, and even confiscatory is he at times. Since the progressive, or we should say the bilious, senators have got ideas of their own about predatory wealth he seems to have become even harsher. Uncle Sam is no story-book uncle. Indeed, we may even be tempted to accept the European characterization of Uncle Shylock.

Every one who does business with Washington knows the trials and tribulations of it, especially in matters of contracts. In the matter of tax-gathering the contact has become even broader. The sour-grape politicians raise a rumpus every now and then over occasional income tax refunds, which we may be sure would never be made unless they were clearly due. Quite likely the Government trims its citizens more often than the other way around.

One of our friends who had to pay a large income tax discovered, after payment of the first installment, that his clerks had made an error in computation. So an amended return was filed, the data remaining exactly as originally reported, but the tax being recomputed. He was required, however, to continue his installments in accordance with the original, erroneous filing. After many days he received a refund, but he was out of pocket the interest on his overpayment.

Perhaps there have been even more quarrels over payment of duties on goods brought home by travelers abroad. The ungenerous law allows each person free entry of \$100 worth. Many travelers have raised the question what is \$100 worth. The law says wholesale value, but the inspectors and appraisers on the wharves have said retail value and have demanded of the victim to exhibit his bills of sale. If the victim has made an estimated discount to reduce to wholesale value he has been doomed to trouble.

The commissioner of customs has recently ruled

that incoming travelers who have known the law have had the right interpretation of it, and it follows that the great majority who have been ignorant or brow-beaten have been overpaying Uncle Sam to the extent of some millions per annum. It is next to impossible, of course, to ascertain the wholesale or manufacturing value of the numerous trinkets and articles of clothing that tourists purchase abroad, and so comply with the letter of the law, but the traveler who is experienced in chaffering in Continental shops is pretty sure that what he finally pays is somewhere from plus 50 to plus 100 per cent.

## World Steel at New High

NOT alone in the American steel industry is production on the increase this year. An analysis of the rate of steel output of five other leading countries shows that in each one there has been a substantial increase during the first half of this year. Production to July 1 of the six foremost producers, compared with the half-year outputs of 1928 and 1913, was as follows in thousands of gross tons per month, according to the compilation of the National Federation of Iron and Steel Manufacturers of Great Britain:

	Monthly Steel Output for First Six Months		
	1929	1928	1913
Great Britain.....	813.8	710.4	638.6
United States.....	4,828.0	4,154.8	2,608.4
Germany.....	1,365.6	1,190.8	1,445.7
France.....	790.2	769.8	384.5
Belgium.....	334.6	322.8	202.3
Luxemburg.....	215.8	211.0	109.0
The six.....	8,348.0	7,359.6	5,388.5

Thus at 8,348,000 tons per month to July 1, this year's rate is roundly a million tons, or 13 per cent, larger than the 7,359,600 tons per month in 1928. It is 55 per cent in excess of the rate of 1913.

While the American increase has been large—16 per cent to July 1 over 1928—the British have also made a good showing at 14.5 per cent. Germany has done equally well, having an increase of 14.7 per cent over 1928, but this is accounted for in part by a strike at the end of 1928. The gain in the other three countries has not been so large.

While the remainder of the year may not realize so large an increase as the first half—it certainly will not in the United States—the year's output for these six will possibly exceed 100,000,000 tons, compared with 88,315,200 tons for 1928—an increase of over 13 per cent. This year's showing is emphatic witness to the fact that the European steel industry has recovered from the war and is now headed toward prosperity. This is true of Russia, as well as of Poland, the Saar and Italy.

## Length of Business Calls

HOW often is the length of a business call unsatisfactory to both the parties involved. The matter is a delicate one, for the fact that the visitor has taken extra time to make the visit, perhaps an overnight railroad journey, makes him in one sense the more important person of the two, though commonly that distinction is held by the other party to the conversation. But men who receive such visitors usually have many to see and that fact must also be taken into account. Wide differences are to be observed in the manner in which different men handle their visitors. Some have the knack of unobtrusively suggesting the

time the caller is expected to spend or the proper scope of the conversation.

When a visitor has a long wait he is in one of two frames of mind when finally admitted. Either he is in a bad humor, which makes the visit less satisfactory to both parties, or he is in a mood, having seen others take so much time, to take his full share also. Of course, calls can be cut short unceremoniously, but that is not a good way to handle the matter. Obviously the call should leave no unpleasant recollection in the mind of either party.

It is assumed that nowadays the business calls that are made are necessary, involving only cases in which the mail, the telegraph or the telephone is inadequate. That makes them important, not mere routine to be gone through with somehow, and skill on both sides is called for in handling the matter. Every one observes how often there is a lack of skill. The office man may sometimes wish a given visitor would stay longer—certainly he wishes many would not stay so long—and the visitor on his part sometimes wishes he could have finished and got away again in less time.

## Riveted Joints, Also, Are Better

ONE might imagine, from the plethora of matter on welding which has been carried in technical and engineering journals, and the relative silence from competitive processes, that the art of riveting was not progressing to any appreciable extent. That such a presumption does not correctly picture the situation, and is due to the lack of colorful news in an established industry, is immediately apparent to a visitor in a modern boiler works, particularly in one which makes drums for the higher pressures and superheats now installed in central stations.

Such an observer, remembering shop practices of 20 years ago, when inch plate was very heavy work, and  $\frac{1}{2}$  inch out-of-round would cause no criticism, opens his eyes at the close limits attained with the more precise machinery now available, even when working on much thicker and stiffer material. In fact, the rough and ready methods of the old-time boiler shop have been entirely superseded by machine shop precision. It is not surprising, indeed, to find that many of the foremen are men of machine shop training.

Refinements in boiler manufacture all point toward closer fitting. The thicker the plate, the more necessary is it that the shape should be correct (to avoid secondary stresses from the increased pressure), and that the fitting should be snug (to prevent leaks or infiltration of embrittling solutions). Consequently one sees the most meticulous care in the bending presses and rolls— $\frac{1}{16}$  inch out-of-round is about the maximum allowable. Edges are milled to correct angle; butt straps and faying surfaces are cleaned, ground and stoned to a paper fit. Bolts in unusual number are used for assembly prior to drilling the rivet holes; drilled holes would sometimes be reamed for a smoother surface and all burrs removed by a slight countersink. Rivets are machined on the shanks and under the head. Ground shanks are even resorted to for work to withstand the highest pressures, with clearances between the hot rivet and hole on the order of 0.01 inch. Imagine, if you can, what would have greeted a specification in 1900, calling for clearance of

1 32 inch in a 1½-inch rivet. It just simply wasn't done. That close fits are really necessary nowadays is indicated by the general practice of machining the skirts of the forged drum heads, turning the inside of the completed drum, and heating the latter mildly for a shrink fit over the head.

While many of these refinements have to do with boiler details other than riveting, the use of turned and ground rivets is in keeping with precision, the general order of the day. Riveting machinery has also been improved in step with advances in other machine tools, not only increasing in power and reach, but in adaptability and ease by which a drum weighing several tons can be moved a fraction of an inch to bring the head-forming dies or snaps in exact line with the center of the rivet hole. Such developments are matched in other plants using lighter thicknesses of metal in mass production, by machines making their own rivets and driving them cold at high speed, or shooting a pre-formed rivet into its hole by a compressed air gun.

No one familiar with the facts can doubt that the quality of the riveted joint made today is better than that of twenty years ago. Even its welding-minded competitors must admit that the riveting machine is extremely efficient (in the sense of cheap to operate) because such a complicated series of operations as laying out, punching and reaming or drilling the holes, assembling, and riveting the seam can still in most cases be quoted at a less price than merely assembling and welding. That in itself is proof that the art of riveting and the manufacturers of riveting machines have been progressing.

### Prolonged Activity in Building

**A**LTHOUGH building construction permits have continued to decline (September making one of the poorest showings of the year, as reported by the F. W. Dodge Corporation), the types of structure that require heavy steel shapes remain an outstandingly strong support of the steel industry. The falling off this year, as compared with 1928, has been mostly in small-type residential buildings. Large work has been going ahead at an almost unprecedented pace, particularly in the New York district.

Figures compiled by the Structural Steel Board of Trade of New York show that in the nine months ended Sept. 30 the steel fabricators of the metropolitan area booked 423,501 tons of structural work in buildings alone, as compared with 458,259 tons for all of last year. Records are not kept by the Structural Steel Board of Trade on so-called civil engineering work, such as subways, bridges and elevated highways, but unofficial records indicate that the awards of steel for such work this year have fully equaled the tonnage used for buildings.

A large volume of new projects in New York is now in contemplation. **THE IRON AGE** last week reported that 63,000 tons had been inquired for, an unusually high weekly total. Large-scale work, some of which may not actually come into the market until next year, is in prospect. Included are the Metropolitan Opera House project, taking in two city blocks on Fifth Avenue; the Cornell medical center, the first units of which are now calling for 18,000 tons of steel, and a continuation of the city's subway program, with 100

additional miles of lines to be constructed within the near future.

With such enormous projects as the new Empire State Building, to be erected on the site of the old Waldorf-Astoria Hotel, requiring 40,000 tons of steel and itself constituting a city of office workers, and other buildings now in course of construction, some towering 60 stories or more, it may well be wondered whether New York office space will not soon reach the point of over-saturation. However, the constantly ascending scale of property valuations which such improvements bring to all surrounding sites, together with the better utilization of the less accessible sections which comes with new subway construction, will make necessary continuous rebuilding in New York to make investments profitable.

While special conditions prevail in the metropolitan district, because of its large and concentrated population, an approach to the New York situation is seen in some other cities in varying degrees. Chicago has pushed its business area well north of the Chicago River, breaking away from the limitations of its Loop district; Cleveland has undertaken a major reconstruction of its business area centering about the new union railroad terminal; Detroit business is moving miles up Woodward Avenue nearer to the large structures erected by the General Motors Corporation and the Fisher Brothers; Philadelphia is entering upon an era of rebuilding its business district, which will follow improvements now under way by the Pennsylvania Railroad.

Bookings of fabricated structural steel, as computed by the Department of Commerce, have run about 16 per cent ahead of those of 1928 for the country as a whole. In New York the indications are that steel for buildings for all of this year will take fully 25 per cent more than the 1928 total and possibly as much as 30 per cent.

While the outlook for a continued high rate of building construction is clouded somewhat by the money situation, this year's large-scale operations have gone on in spite of high money and the use of vast sums in the carrying of securities. A favorable indication of late is a revival of interest in the bond market. In the past this has been a sign of the return of money rates to a basis that would encourage investment in building construction.

### Production Appears to Be Above Distribution

Industrial activity as a whole continues to make a more favorable showing than distribution, either at wholesale or retail. Although this statement must be made with full recognition of the incomplete and sometimes unreliable character of available data, it seems to be warranted by comparisons with past records. This is a situation commonly regarded as unfavorable in its bearing on the outlook for business, since it is taken to indicate that goods are being produced in response to a demand partly speculative, and is accompanied by a gradual accumulation of commodities in dealers' hands.

Something of the kind may be taking place in certain directions. It is suggested by the increase in dealers' stocks of automobiles, the market situation in certain branches of the textile and building-material industries, and similar conditions here and there in other parts of the business structure. While the heavy industries have

been making a series of new high records, the general level of trade, as measured by such standards as railroad freight loadings, bank debits, department store sales and the like, has followed approximately a normal course. Under such conditions, it would not be surprising to find that inventories in general were somewhat larger than a year ago.

If such a condition exists, however, it is not reflected in the usual ways. The level of commodity prices shows not the slightest trace of inflation; the transportation situation is excellent; there is no shortage of labor in most industries; and no conclusive evidence exists that stocks of goods in general are greatly above normal in relation to output and demand. Moreover, the general attitude of business men as to the probable course of trade in the next few months is unquestionably optimistic. —*Guaranty Survey.*

### Business Survey Reveals Good Conditions

Industry throughout the country at the present moment is just a shade more favorably situated than it was a year ago, but numerous individual industries show recessions from their position last year, according to the annual trade survey of the National Association of Manufacturers, presented at the annual meeting in New York this week by J. Lewis Benton, general secretary of the organization.

A questionnaire, covering present trade, prospects for winter, comparison with last fall, production, sales quantities and values, employment, wages and labor conditions, was sent to 3000 members of the association the first of this month, with request that the report be made as of Oct. 4. The tabulation was closed Oct. 7, at which time nearly 1000 replies had been received. The survey covers a compilation of something more than 9000 detailed answers.

Taking the industries as a whole, of the companies reporting, 19 per cent class their present business as excellent; 45 per cent good; 31 per cent fair and 5 per cent poor. Last year they were classified, 17 per cent excellent; 41 per cent good; 34 per cent fair; 6 per cent poor. Prospects for the winter are regarded as excellent by 12 per cent; good by 54 per cent; fair by 30 per cent; poor by 4 per cent; while last year 14 per cent reported excellent; 43 per cent good; 36 per cent fair and 6 per cent poor.

Comparing the business done up to this fall with the same period last year, 53 per cent report better returns; 17 per cent less and 30 per cent find no change. A year ago the report was 50 per cent better; 25 per cent less; 25 per cent no change.

The Allis-Chalmers Mfg. Co. has received during the past week orders covering heavy power plant equipment for three utility companies, aggregating approximately \$2,000,000.

## The Week in Business

### Drift of Current Financial and Economic Opinion

**R**ECOVERY of the stock market, lower call money rates and a reduction in brokers' loans after seven weeks of continued expansion were marked developments of the past seven days.

Stocks regained two-thirds of the ground lost in the preceding month, but opinion still is divided regarding the next phase of the movement, according to Paul Willard Garrett, New York *Evening Post*.

#### Call Money Lowest in 14 Months

The drop in call money to 5 per cent, the lowest official figure for 14 months, is ascribed to various factors, among them the favorable position of the Federal Reserve banks, the buying of acceptances, the let-up in business activity and the loaning on call of large funds held by investment trusts. But the main cause, in the view of Alexander D. Noyes, New York *Times*, was stock market liquidation. He recalls the decline from 20 per cent to 6 per cent last March and the drop from 12 to 6 per cent last December. On both occasions resumption of speculation quickly drove up the rate again to 12 and 10. (On Monday, Oct. 14, it was 6 per cent.)

#### Decline in Brokers' Loans Sub-normal

The decline in brokers' loans—\$91,000,000—was the least favorable omen, in Mr. Noyes's opinion, since previously a loan reduction of \$120,000,000 to \$220,000,000 in a week has always followed a roundup of stock market liquidation.

Reduced lending by banks more than accounted for last week's decline, as loans from "others" showed a further gain.

Appraisals of the credit situation are giving increasing attention to Federal Reserve policy. With the Reserve ratio at the high level of 74.4 per cent for the week ended Oct. 9, compared with 67.6 per cent one year previous, it is evident that more credit can easily be granted if the Reserve authorities so choose. Since the middle of July, says the *Analyst*, reserve holdings of acceptances have expanded more than \$250,000,000

(corrected for seasonal variation). In fact, purchases of bills, in the view of Wade Brothers & Co., New York, are beyond ordinary seasonal needs.

#### Credit and Stable Commodity Prices

Control of credit by the Reserve Board may not have succeeded in harnessing stock market speculation, but it has undoubtedly been an important factor in preventing commodity price inflation.

In pre-war years an inflow of gold was usually attended by rising commodity values. But the increased imports of 1929 have been negated by a contraction of Reserve credit. The level of wholesale prices during the year, according to the Alexander Hamilton Institute, has dropped some 2½ per cent.

#### American Buying Power Undiminished

With the more reassuring outlook in the money market has come a more sanguine view of business. "It is absurd," says Theodore H. Price in *Commerce and Finance*, "to maintain that American prosperity is conditioned upon a constant and unvarying gain in its business or industrial output. The truth is that the buying power of our wage earners and our agricultural workers is about as high as it ever was in the history of the country."

Meanwhile freight car loadings, for the week ended Sept. 28, were the largest this year, and shippers' advisory boards forecast heavier traffic in the current fourth quarter than last year for all but three out of 13 districts.

Recent relaxation in business activity has been chiefly due to a sharp drop in automobile production. L. A. Miller, president of the Willys-Overland company, states that manufacturers have shipped cars to dealers in excess of the purchasing power of their communities, resulting in an acute used car problem. New car stocks, on the other hand, have shown a downward trend in the past few months, according to *Automotive Industries*.

# Iron and Steel Markets

## Industry in Transition Period

Steel Producers Adjusting Themselves to Drastic Reduction  
in Automotive Demand—Banner Week  
in Railroad Car Orders

WITH further retrenchment by motor car manufacturers as they prepare to bring out new models, steel shipments to the automobile industry have reached the lowest point in 18 months. The reduction in demand from this major customer of the mills has been too drastic to be offset by the heavier requirements of the railroads, impressive as they are.

A failure to foresee the severity of this reaction, coupled with continued pressure for business volume, has caused wider unsettlement of the price situation, with dips in extreme cases of \$2 and \$3 a ton below market levels that prevailed 60 days ago.

The present problem of the steel industry is to adjust itself to a curtailed, though by no means low, scale of activity. It is perhaps significant that steel makers are increasingly concerned with gaging the duration of the present lull in automotive demand. While it is reported that the Chevrolet Motor Co. has suspended operations until Nov. 15, the placing of additional November orders for steel by both parts makers and motor car manufacturers themselves points to a gradual stepping up of the industry's production throughout next month. If this program is delayed it will be because of a general disposition to await changes in the Ford model before making definite plans for the future.

Steel ingot production has given further ground. The Steel Corporation's average is down to 80 per cent. The rate for the industry in the Chicago district is estimated at 85 per cent, while at Pittsburgh it does not exceed 80 per cent. The Youngstown average is 75 per cent and Wheeling district plants are running at 65 to 70 per cent of capacity.

Railroad equipment buying is the bright spot of the week. Orders for 11,600 freight cars raised the number placed since Oct. 1 to more than 18,000, requiring over 200,000 tons of steel, exclusive of the wheels and axles. New inquiries appeared for 6000 freight cars, as well as 45 locomotives.

The Pennsylvania will distribute orders for 310,000 tons of rails by the end of the week, and early action is expected on the New York Central's inquiry for 200,000 tons. The North Western and the Rock Island will also soon buy rails.

Rail purchases, as well as contracts for semi-finished steel, helped to account for the Steel Corporation's gain in unfilled tonnage in September. Specifications against these earlier orders are now being received and rail production at Chicago will be stepped up next week from 75 per cent to 80 per cent of capacity. The Ensley mill, which had been idle, resumed operations Monday.

Three light cruisers to be built in the Navy yards

will require 22,000 tons of steel, on which bids will be opened early in November.

Pipe line inquiries from Cleveland and Detroit call for 10,000 to 15,000 tons of plates, and a 300-mile project for an oil company involves 20,000 tons of 4, 6 and 8-in. pipe.

Fabricated structural steel lettings for the week, at 23,000 tons, were light, but the unusually large total of pending work was augmented by new inquiries for 49,000 tons, of which 20,000 tons came out of the New York district.

Sheet mill operations have declined to 75 per cent of capacity or less, and strip mills are running at 50 to 60 per cent. Automobile body sheets are now generally quotable at 4c., Pittsburgh, or \$2 a ton below the recent market. No. 13 blue annealed sheets have been sold to large buyers, in some instances, at 2.25c., Pittsburgh, also a reduction of \$2 a ton. Such quotations, however, are usually made only by continuous mills, which have also sold No. 10 gage at as low as 2c., Pittsburgh, compared with a more common minimum of 2.10c.

Strip prices have been fairly steady, although occasional large tonnage sales of hot-rolled material have been made at 1.80c., a \$2 a ton concession. Shapes and bars are more freely available at 1.90c., Pittsburgh, and plates, although still quoted at 1.95c., have not been exempt from shading.

Heavy melting scrap has declined 50c. a ton at Philadelphia and 25c. a ton at Chicago, but has developed strength at Pittsburgh, where a large steel company purchase took most of the surplus supplies out of the market.

Connellsville coke is firmer, following a sharp reduction in the output of furnace grade.

Pig iron buyers, particularly those near steel producing centers, have no incentive to hasten their purchases in view of the prospect of larger offerings of surplus tonnage from steel works blast furnaces. Reductions in foundry melt have been restricted mainly to the automobile industry. The Ford company, however, has bought 17,000 tons of basic iron and has placed additional orders for high-silicon malleable iron, bringing its total purchases of that grade in the past four weeks to 16,000 tons.

Fabricated structural steel lettings in September (computed) totaled 315,700 tons, compared with 365,750 tons in August. Bookings in the first nine months, at 2,952,950 tons, established a new record, exceeding the previous high mark of last year by nearly 16 per cent.

Both of THE IRON AGE composite prices are unchanged, finished steel at 2.369c. a lb., the lowest level so far this year, and pig iron at \$18.29 a gross ton, which is 4c. a ton above the year's low.

# A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
No. 2 fdy., Philadelphia.....	\$21.26	\$21.26	\$21.26	\$20.76
No. 2, Valley furnace.....	18.50	18.50	18.50	17.00
No. 2 Southern, Cin'ti.....	17.19	17.19	17.19	19.94
No. 2 Birmingham.....	14.50	14.50	14.50	16.25
No. 2 foundry, Chicago*.....	20.00	20.00	20.00	18.50
Basic, del'd eastern Pa.....	19.75	19.75	19.75	19.75
Basic, Valley furnace.....	18.50	18.50	18.50	17.00
Valley Bessemer, del'd P'gh..	20.76	20.76	20.76	19.26
Malleable, Chicago*.....	20.00	20.00	20.00	18.50
Malleable, Valley.....	19.00	19.00	19.00	17.50
Gray forge, Pittsburgh.....	19.76	19.76	19.76	18.26
L. S. charcoal, Chicago.....	27.04	27.04	27.04	27.04
Ferromanganese, furnace....	105.00	105.00	105.00	105.00

Rails, Billets, Etc., Per Gross Ton:	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.00
Re-rolling billets, Pittsburgh..	35.00	35.00	35.00	33.00
Sheet bars, Pittsburgh.....	35.00	35.00	35.00	33.00
Slabs, Pittsburgh.....	35.00	35.00	35.00	33.00
Forging billets, Pittsburgh....	40.00	40.00	40.00	38.00
Wire rods, Pittsburgh.....	40.00	40.00	42.00	42.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb....	1.85	1.85	1.85	1.90

Finished Steel,	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.90	1.90	1.95	1.90
Bars, Chicago.....	2.05	2.05	2.05	2.00
Bars, Cleveland.....	1.95	1.95	1.95	1.90
Bars, New York.....	2.24	2.24	2.29	2.24
Tank plates, Pittsburgh.....	1.95	1.95	1.95	1.90
Tank plates, Chicago.....	2.05	2.05	2.05	2.00
Tank plates, New York.....	2.22½	2.22½	2.22½	2.22½
Structural shapes, Pittsburgh..	1.90	1.90	1.95	1.90
Structural shapes, Chicago....	2.05	2.05	2.05	2.00
Structural shapes, New York..	2.14½	2.19½	2.19½	2.19½
Cold-finished bars, Pittsburgh..	2.30	2.30	2.30	2.10
Hot-rolled strips, Pittsburgh..	1.90	1.90	1.90	1.75
Cold-rolled strips, Pittsburgh..	2.75	2.75	2.75	2.75

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Finished Steel,	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh....	2.75	2.75	2.85	2.75
Sheets, black, No. 24, Chicago	2.95	2.95	2.95	2.85
dist. mill.....	3.50	3.50	3.50	3.50
Sheets, galv., No. 24, P'gh....	3.60	3.60	3.60	3.60
Sheets, galv., No. 24, Chicago	2.35	2.35	2.35	2.10
dist. mill.....	2.45	2.45	2.45	2.20
Wire nails, Pittsburgh.....	2.45	2.45	2.45	2.55
Wire nails, Chicago dist. mill..	2.45	2.45	2.50	2.60
Plain wire, Pittsburgh.....	2.40	2.40	2.40	2.40
Plain wire, Chicago dist. mill..	2.40	2.40	2.45	2.45
Barbed wire, galv., P'gh.....	3.10	3.10	3.20	3.20
Barbed wire, galv., Chicago	3.15	3.15	3.30	3.25
dist. mill.....	\$5.35	\$5.35	\$5.35	\$5.25
Tin plate, 100 lb. box, P'gh....				

Old Material, Per Gross Ton:	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Heavy melting steel, P'gh....	\$17.25	\$17.25	\$18.25	\$17.75
Heavy melting steel, Phila....	15.50	16.00	16.50	16.00
Heavy melting steel, Ch'go....	14.25	14.50	15.00	14.00
Carwheels, Chicago.....	14.00	14.00	14.00	13.75
Carwheels, Philadelphia.....	16.50	16.50	16.50	16.50
No. 1 cast, Pittsburgh.....	15.50	15.50	15.50	15.50
No. 1 cast, Philadelphia.....	16.00	16.00	16.50	17.00
No. 1 cast, Ch'go (net ton)....	14.50	14.50	14.50	15.50
No. 1 RR. wrot, Phila.....	16.00	16.00	16.00	15.50
No. 1 RR. wrot, Ch'go (net)...	14.00	14.00	14.00	12.75

Coke, Connellsville,	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Per Net Ton at Oven:				
Furnace coke, prompt.....	\$2.65	\$2.65	\$2.65	\$2.85
Foundry coke, prompt.....	3.75	3.75	3.75	3.75

Metals,	Oct. 15, 1929	Oct. 8, 1929	Sept. 17, 1929	Oct. 16, 1928
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	18.12½	18.12½	18.12½	15.25
Electrolytic copper, refinery..	17.75	17.75	17.75	15.00
Tin (Strait), New York.....	42.25	43.37½	45.00	48.50
Zinc, East St. Louis.....	6.80	6.80	6.80	6.25
Zinc, New York.....	7.15	7.15	7.15	6.60
Lead, St. Louis.....	6.70	6.70	6.70	6.32½
Lead, New York.....	6.90	6.90	6.90	6.50
Antimony (Asiatic), N. Y. ....	8.50	8.50	8.75	11.00

## Pittsburgh

### Steel Plant Operations Curtailed Further—Shipments to Automobile Industry Smallest in 18 Months

PITTSBURGH, Oct. 15.—Pittsburgh and nearby steel companies, particularly makers of flat-rolled products, have curtailed operations further in the last week. With shipments to the automobile industry at the lowest point in about 18 months, steel makers are now chiefly concerned in gaging the duration of the present lull in buying from that quarter. The Chevrolet Motor Co. today suspended operations until Nov. 15, but the placing of November orders by parts makers and the automobile companies themselves indicate that production will be gradually stepped up next month. The automobile industry seems to be waiting for proposed changes in the Ford model before making any definite plans for the future.

Placing of rather large car orders with railroad equipment builders tributary to Pittsburgh mills has been the most favorable factor in this market during the past week. This business will contribute heavily to the backlogs of local plate mills and at least one nearby car builder now has sufficient work ahead of it to last well into the first quarter of next year.

Barge builders are also well occupied for the remainder of the year and structural fabricators and shape mills are fairly busy. Demand for bars has improved slightly, but is by no means good.

The local rail mill will soon be actively engaged on new orders. The pipe market is quiet, but has been

improved by an inquiry from a large oil company for 300 miles of 4, 6 and 8-in. line pipe.

Large users of tin plate are beginning to allot their 1930 tonnage, but operations of independent makers have declined further since the first of the month. The average for the industry is held up by the comparatively high

rate of operations of the leading maker.

Reduced demand from the automobile industry has forced down sheet operations to about 75 per cent of capacity, while strip makers are not more than 60 per cent engaged. In the face of such light demand, strip prices have held remarkably well and concessions are still rather exceptional on both hot and cold-rolled material. Demand for cold-finished steel bars is also very quiet, but the price is holding.

Sheet prices are weak, but mills are making determined efforts to hold the market at recently reduced levels. In the Pittsburgh district, wire and wire nail prices are gaining some stability, but shading is still common in adjacent territory.

Pig iron is quiet, but shipments are improving slightly. A local steel company is inquiring for a tonnage of basic. The scrap market has developed considerable strength following a large purchase by a nearby steel company, which took most of the surplus heavy melting steel out of the market. Coke is also stronger and production of the furnace grade has been reduced sharply in the Connellsville district.

**Pig Iron.**—With the exception of an inquiry for basic iron by the Edgewater Steel Co., Oakmont, Pa., the pig iron market is very quiet. Sales of carload lots are common, but large users who have not contracted for their last quarter requirements seem in no hurry to cover and are buying on a hand-to-mouth basis. Shipments from local and Valley furnaces are a trifle heavier than they were in September and yard stocks of leading producers have grown very little. Some sellers are fairly well covered for several weeks, but others are beginning to need orders. Steel company iron is not yet a factor in the market, at least not any more than it is under normal conditions, but the possibility of cheaper iron being available as steel company operations decline is certainly giving large users of basic no incentive to hurry their purchases. Prices are holding at \$18.50, Valley, for basic and foundry iron and at \$19 for malleable and Bessemer.

Prices per gross ton, f.o.b. Valley furnace:	
Basic .....	\$18.50
Bessemer .....	19.00
Gray forge .....	18.00
No. 2 foundry.....	18.50
No. 3 foundry.....	18.00
Malleable .....	19.00
Low phos., copper free.....	27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

Prices per gross ton, f.o.b. Pittsburgh district furnace:	
Basic .....	\$19.00
No. 2 foundry.....	19.00
No. 3 foundry.....	18.50
Malleable .....	19.50

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

**Semi-Finished Steel.**—This market is dull, as large users have quietly extended their third quarter contracts and very little spot tonnage is coming into the picture just now. Shipments are about the same as they were during the greater part of September, although the requirements of some consumers have been curtailed slightly this month. This is notably true in the case of strip makers, whose operations are very low. Mills have now fully replenished their normal reserve stocks of unfinished steel and, in the face of light demand from their finishing mills, are reducing opera-

tions from week to week. The price structure for the fourth quarter has been given little open market test, but it seems reasonably certain that small tonnages have moved at \$35, Pittsburgh or Youngstown, for billets, slabs and sheets bars. Large customers enjoy preferentials in the usual way. There is some consumer opposition to this price, particularly from sheet makers who are selling their finished product at lower prices. Wire rods have settled to \$40, Pittsburgh or Cleveland, and fourth quarter contracts of most users have been readjusted to this level. Further price weakness seems unlikely at this time, as makers of wire and nails are striving to maintain the market at present levels and a decline in raw material prices would have an unfavorable sentimental effect.

**Bolts, Nuts and Rivets.**—Demand has declined slightly this month, but bolt and nut makers are still operating at a good rate for this season of the year. The average for the industry is not less than 65 per cent of capacity. Better business is anticipated in view of the large car orders now being placed and the carriers are expected to be heavy consumers during the remainder of the year. Prices are unchanged at 70 per cent off list for bolts and nuts and \$3.10 a 100 lb., base Pittsburgh, for large rivets. Rivets 7/16-in. and smaller are sold at 70 and 10 per cent off list.

**Rails and Track Supplies.**—The market is very active from the standpoint of work in prospect, but actual awards have not been numerous in the last week. The Louisville & Nashville has placed 62,000 tons of rails with the Southern mill, as well as 10,000 kegs of spikes with the same maker. The New York Central and the Pennsylvania have not yet announced the distribution of their rail orders and the Baltimore & Ohio has not brought out its inquiry. Specifications for track accessories are rather light at this time of the year, but are seasonably satisfactory. Light rails are quiet, with prices ranging from \$34 on the rerolled product to \$36 for the new billet material.

**Bars, Shapes and Plates.**—Business in the first half of October has shown

no further decline from September and slight improvement is reported from some quarters. Pittsburgh district mills are not yet receiving specifications against recent car orders placed with builders in this area, although recent awards will benefit Pittsburgh shops. It is expected that the steel for 1500 of the 5000 freight cars placed by the Southern will come to a mill in this territory. Barge business is also showing improvement; a recent order for five steel barges placed with a local maker will take 750 tons. Considerable additional tonnage is in prospect from this source and the completion of the Ohio River canalization project, which will be celebrated this week, is expected to give renewed impetus to this work. Structural business is marking time, and, although few large projects are coming out in this vicinity, both mills and fabricators in this district are well occupied with work from more distant points. Demand for merchant bars is not active. Cold-finishing mills are operating at a reduced rate and other large consumers are only fairly well occupied. The reinforcing bar trade, which has been very busy all summer, is growing less active as cold weather approaches. Prices show no substantial change, with mills still quoting 1.95c., Pittsburgh, on plates, but with the market on bars and shapes ranging from 1.90c. to 1.95c. Large tonnages nearly always command the lower price. There is less question about the plate price, as demand is somewhat stronger and mills have less incentive to quote a lower figure.

**Wire Products.**—Following several weeks of instability, wire and wire nail prices appear to be gaining some strength at recent low levels. In Pittsburgh, the minimum on nails is \$2.45 a keg, although concessions in outlying districts are reported occasionally. The wire price to jobbers is still somewhat unsettled, but the price to the manufacturing trade is holding at 2.40c., Pittsburgh. Demand is generally quiet, so far as jobbers are concerned, but there is a fair movement of manufacturers' wire. The lull in automotive buying has adversely affected business with some makers.

## THE IRON AGE Composite Prices

### Finished Steel

Oct 15, 1929, 2.369c. a Lb.

One week ago.....	2.369c.
One month ago.....	2.398c.
One year ago.....	2.362c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

	High	Low
1929	2.412c., April 2;	2.369c., Oct. 8
1928	2.391c., Dec. 11;	2.314c., Jan. 3
1927	2.453c., Jan. 4;	2.293c., Oct. 25
1926	2.453c., Jan. 5;	2.403c., May 18
1925	2.560c., Jan. 6;	2.396c., Aug. 18

### Pig Iron

Oct. 15, 1929, \$18.29 a Gross Ton

One week ago.....	\$18.29
One month ago.....	18.29c
One year ago.....	17.84
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High	Low
1929	\$18.71, May 14;	\$18.25, Aug. 27
1928	18.59, Nov. 27;	17.04, July 24
1927	19.71, Jan. 4;	17.54, Nov. 1
1926	21.54, Jan. 5;	19.46, July 13
1925	22.50, Jan. 13;	18.96, July 7

# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill	1.90c. to 1.95c.
F.o.b. Chicago	2.05c.
Del'd Philadelphia	2.22c. to 2.27c.
Del'd New York	2.24c. to 2.29c.
Del'd Cleveland	1.92½c. to 1.95c.
F.o.b. Cleveland	1.90c.
F.o.b. Lackawanna	2.00c. to 2.05c.
F.o.b. Birmingham	2.10c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

### Billet Steel Reinforcing

F.o.b. Pittsburgh mills, 40, 50, 60-ft.	2.05c.
F.o.b. Pittsburgh mills, cut lengths	2.30c.
F.o.b. Birmingham, mill lengths	2.10c.

### Rail Steel

F.o.b. mills, east of Chicago dist.	1.85c. to 1.90c.
F.o.b. Chicago Heights mill	1.95c.
Del'd Philadelphia	2.27c.

### Iron

Common iron, f.o.b. Chicago	2.05c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.12c.
Common iron, del'd New York	2.14c.

## Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill	1.95c.
F.o.b. Chicago	2.05c.
F.o.b. Birmingham	2.10c.
Del'd Cleveland	2.14c.
Del'd Philadelphia	2.15c.
F.o.b. Coatesville	2.05c.
F.o.b. Sparrows Point	2.05c.
F.o.b. Lackawanna	2.05c.
Del'd New York	2.22½c.
C.i.f. Pacific ports	2.35c.

## Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill	1.90c. to 1.95c.
F.o.b. Chicago	2.05c.
F.o.b. Birmingham	2.10c.
F.o.b. Lackawanna	2.05c.
F.o.b. Bethlehem	2.05c.
Del'd Cleveland	2.14c.
Del'd Philadelphia	1.96c. to 2.06c.
Del'd New York	2.14½c.
C.i.f. Pacific ports	2.35c.

## Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, P'gh	2.00c.
Wider than 6 in., P'gh	1.90c.
6 in. and narrower, Chicago	2.20c.
Wider than 6 in., Chicago	2.10c.
Cooperage stock, P'gh	2.20c.
Cooperage stock, Chicago	2.30c.

## Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill	2.30c.
Bars, f.o.b. Chicago	2.30c.
Bars, Cleveland	2.30c.
Bars, Buffalo	2.30c.
Shafting, ground, f.o.b. mill	*2.65c. to 3.60c.
Strips, P'gh	2.75c. to 2.85c.
Strips, Cleveland	2.75c. to 2.85c.
Strips, del'd Chicago	3.05c. to 3.15c.
Strips, Worcester	2.90c. to 3.00c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland	4.25c.

\*According to size.

## Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland, to jobbers and retailers.)

	Base per Keg
Wire nails	\$2.45 to \$2.55
Galvanized nails	4.45 to 4.55
Galvanized staples	3.15 to 3.25
Polished staples	2.90c. to 3.00c.
Cement coated nails	\$2.45 to \$2.55

	Base per 100 Lb.
Bright plain wire, No. 6 to No. 9	
Annealed	\$2.40 to \$2.50
Spring wire	2.55 to 2.65
Galv'd wire, No. 9	3.50 to 3.60
Barbed wire, galv'd	3.00 to 3.10
Barbed wire, painted	3.10 to 3.20
Woven wire fence (per net ton to retailers)	2.85 to 2.95
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass. (wire), mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.	

## Cut Nails

	Per 100 Lb.
Carloads, Wheeling, Reading or Northumberland, Pa.	\$2.70
Less carloads, Wheeling or Reading	2.80

## Light Plates

No. 10, blue annealed, f.o.b. P'gh	2.10c. to 2.20c.
No. 10, blue annealed, f.o.b. Chicago dist.	2.30c.
No. 10, blue annealed, del'd Phila.	2.42c. to 2.52c.
No. 10, blue annealed, B'ham	2.35c.

## Sheets

### Blue Annealed

	Base per Lb.
No. 13, f.o.b. P'gh	2.25c. to 2.35c.
No. 13, f.o.b. Chicago dist.	2.45c.
No. 13, del'd Philadelphia	2.57c. to 2.67c.
No. 13, blue annealed, B'ham	2.50c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	2.75c.
No. 24, f.o.b. Chicago dist. mill	2.95c.
No. 24, del'd Philadelphia	3.07c.
No. 24, f.o.b. Birmingham	3.10c.

### Metal Furniture Sheets

No. 24, f.o.b. P'gh	4.10c. to 4.20c.
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### Galvanized

No. 24, f.o.b. Pittsburgh	3.50c. to 3.60c.
No. 24, f.o.b. Chicago dist. mill	3.60c. to 3.70c.
No. 24, del'd Cleveland	3.59c. to 3.69c.
No. 24, del'd Philadelphia	3.82c. to 3.92c.
No. 24, f.o.b. Birmingham	3.75c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.90c. to 3.00c.
No. 28, f.o.b. Chicago dist. mill	3.00c. to 3.10c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.00c.
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### Long Ternes

No. 24, 8-lb. coating, f.o.b. mill	4.00c. to 4.10c.
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### Vitreous Enameling Stock

No. 24, f.o.b. Pittsburgh	3.90c.
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## Tin Plate

### Per Base Box

Standard cokes, f.o.b. P'gh district mills	\$5.35
Standard cokes, f.o.b. Gary	5.45

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C.	\$11.20	25-lb. coating I.C.	\$16.70
15-lb. coating I.C.	14.00	30-lb. coating I.C.	17.75
20-lb. coating I.C.	15.80	40-lb. coating I.C.	19.85

## Alloy Steel Bars

(F.o.b. makers' mill)

Alloy Quality Bar Base, 2.65c. to 2.75c. per Lb.	S.A.E. Series	Alloy
Numbers		Differential
2000 (½% Nickel)		\$0.25
2100 (1¼% Nickel)		0.55
2300 (3½% Nickel)		1.50
2500 (5% Nickel)		2.25
3100 Nickel Chromium		0.55
3200 Nickel Chromium		1.35
3300 Nickel Chromium		3.80
3400 Nickel Chromium		3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)		0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)		0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)		1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)		0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)		0.45
5100 Chromium Spring Steel		0.20
6100 Chromium Vanadium Bars		1.20
6100 Chromium Vanadium Spring Steel		0.95
9250 Silicon Manganese Spring Steel (flats)		0.25
Rounds and squares		0.50
Chromium Nickel Vanadium		1.50
Carbon Vanadium		0.95

Above prices are for hot rolled steel bars, forging quality. The differential for cold-drawn bars is ¾c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2¼ in. thick, regardless of sectional area, take the bar price.

## Rails

### Per Gross Ton

Standard, f.o.b. mill	\$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	36.00

## Track Equipment

### Base per 100 Lb.

Spikes, ¾ in. and larger	\$2.80
Spikes, ½ in. and smaller	2.80
Spikes, boat and barge	3.00
Tie plate, steel	2.15

Angle bars	\$2.75
Track bolts, to steam railroads	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count	70 per cent off list

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

### Butt Weld

Inches	Steel	Galv.	Inches	Iron	Black	Galv.
¼	45	19½	¼ and ¾	+11	+36	
½	51	25½	¾		23	5
¾	56	42½	1		28	11
1	60	48½	1 and 1½		31	15
1 to 3	62	50½	1½ and 2		35	18

### Lap Weld

2	55	43½	2		23	9
2½ to 6	59	47½	2½ to 3½		28	13
7 and 8	56	43½	4 to 6		30	17
9 and 10	54	42½	7 and 8		29	16
11 and 12	53	40½	9 to 12		26	11

Butt Weld, extra strong, plain ends

¼	41	24½	¼ and ¾	+13	+48	
½ to ¾	47	30½	¾		23	7
1	53	42½	1		28	12
¾	58	47½	1 to 2		34	18
1 to 1½	60	49½				
2 to 3	61	50½				

Lap Weld, extra strong, plain ends

2	53	42½	2½		29	13
2½ to 4	57	46½	2½ to 4		34	20
4½ to 6	56	45½	4½ to 6		33	19
7 to 8	52	39½	7 and 8		31	17
9 and 10	46	32½	9 to 12		21	8
11 and 12	44	31½				

On carloads the above discounts on steel pipe are increased on block by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2½ in.	38
2½ in.—2¾ in.	46
3 in.	52
3½ in.—3¾ in.	54
4 in.	57
4½ in. to 6 in.	46
1½ in.	1
1¾ in.	8
2 in.—2¼ in.	13
2½ in.—2¾ in.	16
3 in.	17
3½ in. to 3¾ in.	18
4 in.	20
4½ in.	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts: Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

### Cold Drawn

1 in.	61	3 in.	45
1½ to 1½ in.	53	3½ to 3½ in.	49
1¾ in.	37	4 in.	51
2 to 2½ in.	32	4½, 5 and 6 in.	40
2½ to 2½ in.	40		

### Hot Rolled

2 and 2½ in.	38	3½ to 3½ in.	54
2½ and 2½ in.	46	4 in.	57
3 in.	52	4½, 5 and 6 in.	46

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage take the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

### Per Cent Off List

Carbon, 0.10% to 0.30%, base (carloads)	55
Carbon, 0.30% to 0.40%, base	60
Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	

**Ferroalloys.**—Shipments have declined slightly in the last month, but one or two companies have recently increased their requirements, following curtailment in August and September. Both buyers and sellers of ferromanganese are watching the tariff situation closely, but it is likely that next year's contracts will be made on the basis of present conditions, with revision in case the duty on manganese ore is removed. Contracting will begin in another month. Spiegeleisen is quiet and the market is lacking in inquiry.

**Warehouse Business.**—Sales out of warehouse have been rather slow in this district in the last few weeks, but prices have not reflected weakness in mill quotations, except in the case of sheets and wire nails. Black sheets are quoted at 3.80c. a lb. in lots of 25 or more bundles, while galvanized are at 4.45c. Wire nails are available at \$2.80 a keg, and plain wire is off \$2 a ton. Plates and structural shapes are holding at 3c., and reinforcing bars at 2.75c., in cut lengths.

**Tubular Products.**—Business in standard butt-weld pipe is reaching the end of its season, but mills are still fairly well occupied. This product has shown something of a decline from last year in aggregate tonnage, but makers who have followed the trend of small building work during the year have not been disappointed in the showing. Lap-weld operations continue fairly high, but are on a hand-to-mouth basis and few mills have any large backlog tonnages. Demand from the oil country is only fair, but seamless mills have had a fair year and see no prospect of any marked curtailment in demand. Pipe makers are watching the oil industry closely in an effort to discern the trend of conservation programs in prospect, but moves in this direction

are not expected to have any immediate effect on steel pipe business. Mechanical tubing is quiet, but there is a fair demand for boiler tubes. The recent \$4 a ton advance in seamless and lap-welded boiler tubes has been adopted by all makers.

**Sheets.**—Declining sheet demand which has been in evidence for several weeks is now beginning to be reflected fully in sheet mill operations, which are now not more than 75 per cent of capacity, with some companies considerably under that figure. The leading interest ran its mills last week at 79 per cent. After record September shipments the decline this month is rather marked, but there are already signs of improved demand for November rolling. By that time the large makers of automobiles are expected to have completed their model changes and, although improvement may be rather slow, production schedules are expected to be stepped up regularly. Prices are still rather unsettled. Black sheets have definitely declined to 2.75c., Pittsburgh, and mills are no longer making any effort to get more than 4c. for automobile body sheets. Higher quotations are encountered occasionally. Galvanized material is still quotable at 3.50c. to 3.60c., Pittsburgh, although the higher figure is applying on less business than it did a month ago. On blue annealed sheets, prices on the jobbing mill product are holding at 2.20c. and 2.35c., Pittsburgh, for the No. 10 and No. 13 gages, respectively, but the sizes made on the continuous strip or sheet mills are going at \$4 a ton less. On the No. 10 gage strip, prices as low as 1.90c., Pittsburgh, have been encountered. Such a condition adds considerable confusion to a market which is already rather muddled, but the leading maker of blue annealed sheets by the jobbing and plate mill method still has four weeks' work on its books and is not meeting with any particular difficulty in maintaining the full quoted price.

**Tin Plate.**—Mill operations have declined during the last week, and, although the leading maker has reduced its rate very little, the average for independent mills is not above 60 per cent of capacity. However, orders for 1930 tonnage are beginning to come in and mill schedules will be stepped up during the next month as makers begin to work on this business.

**Strip Steel.**—Strip demand is anything but brisk, but reports of expected improvement are heard on all sides and it now seems certain that a better demand from the leading consuming industry can be relied upon by the middle of next month. The automobile makers are not placing orders for strip, nor are they releasing tonnage on old orders. As a result, the strip industry is not operating at better than 60 per cent of capacity. Prices are holding fairly well, although there have been some concessions. The principal weakness is in the wider sizes of hot-rolled, on which mills are quoting 1.90c., Pittsburgh.

The narrower width are rather firm at 2c., and the market on cold-rolled is unchanged at 2.75c. to 2.85c., Pittsburgh or Cleveland.

**Cold-Finished Steel Bars and Shafting.**—This market is very quiet, although conditions have not changed materially since early September. With the automobile industry virtually out of the market, demand is confined to widely diversified lines which are not large tonnage users.

**Coal and Coke.**—The furnace coke market has a better tone, as most of the surplus material which forced prices down a few weeks ago has been disposed of, and production in the Connellsville region has been curtailed sharply. The H. C. Frick Coke Co. put out 1241 ovens in the region last week. Furnace coke is still quotable at \$2.65 to \$2.75, Connellsville, but the lower quotation is less common and will likely disappear in a short time. Demand for foundry coke is still quiet and prices are weak. Domestic fuel needs are improving consistently.

**Old Material.**—Following the sale of a large tonnage of No. 1 heavy melting steel to a nearby steel company at \$17, the scrap market has a much stronger tone. This purchase took much surplus steel out of the market, and dealers are paying better prices to cover against this sale than they were a week ago. Other small sales to mills have also been made, bringing prices as high as \$17.50. Compressed sheets are still rather quiet, and, in the continued absence of mill buying are hardly quotable as high as steel. Dealers have paid \$16.75 and less for this material and the principal users are turning down offers to buy at \$17 and \$17.25. The light grades of scrap are quiet, but sales of specialties are being made regularly at \$20.50 to \$21. Steel foundry operations are good and shipments of this grade of scrap are keeping up.

*Prices per gross ton delivered consumers yards in Pittsburgh and points taking the Pittsburgh district freight rate:*

Basic Open-Hearth Grades:	
No. 1 heavy melting steel.	\$17.00 to \$17.50
No. 2 heavy melting steel.	15.00 to 15.50
Scrap rails.	16.00 to 16.50
Compressed sheet steel.	16.75 to 17.25
Bundled sheets, sides and ends.	15.50 to 16.00
Cast iron car wheels.	15.50 to 16.00
Sheet bar crops, ordinary.	18.50 to 19.00
Heavy breakable cast.	12.00 to 12.50
No. 2 railroad wrought.	17.00 to 17.50
Hvy. steel axle turnings.	16.00 to 16.50
Machine shop turnings.	11.50 to 12.00
Acid Open-Hearth Grades:	
Railr. knuckles and couplers.	20.50 to 21.00
Railr. coil and leaf springs.	20.50 to 21.00
Roller steel wheels.	20.50 to 21.00
Low phos. billet and bloom ends.	21.50 to 22.00
Low phos., mill plates.	21.50 to 22.00
Low phos., light grades.	20.50 to 21.50
Low phos., sheet bar crops.	21.50 to 22.00
Heavy steel axle turnings.	16.00 to 16.50
Electric Furnace Grades:	
Low phos., punchings.	19.50 to 20.50
Hvy. steel axle turnings.	16.00 to 16.50
Blast Furnace Grades:	
Short shoveling steel turnings.	12.00 to 12.50
Short mixed borings and turnings.	12.00 to 12.50
Cast iron borings.	12.00 to 12.50
Rolling Mill Grades:	
Steel car axles.	21.50 to 22.00
Cupola Grades:	
No. 1 cast.	15.00 to 16.00
Rails 3 ft. and under.	19.00 to 20.00

#### Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	2.60c.
Squares and flats	4.10c.
Bands	3.25c.
Hoops	4.25c.
Black sheets (No. 24), 25 or more bundles	3.80c. to 3.90c.
Galv. sheets (No. 24), 25 or more bundles	4.45c. to 4.55c.
Light plates, blue annealed (No. 10), 1 to 24 plates	3.35c. to 3.45c.
Blue annealed sheets (No. 13), 1 to 24 sheets	3.50c. to 3.60c.
Galv. corrug. sheets (No. 28), per square	\$4.43
Spikes, large	3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count, 60 per cent off list	
Machine bolts, 100 count, 60 per cent off list	
Carriage bolts, 100 count, 60 per cent off list	
Nuts, all styles, 100 count, 60 per cent off list	
Large rivets, base per 100 lb.	\$3.50
Wire, black soft, ann'd, base per 100 lb.	\$2.90 to 3.00
Wire, galv. soft, base per 100 lb.	2.90 to 3.00
Common wire nails, per keg	2.80 to 2.90
Cement coated nails, per keg	2.95 to 3.05



# Chicago

## Railroad Needs Still Feature of Steel Market—Ingot Output Barely Sustained at 85 Per Cent

CHICAGO, Oct. 15.—The limelight in the Western iron and steel market is held by railroad needs of rails and equipment. The Santa Fe has closed for 5754 freight cars and 51 passenger type cars, requiring in all well over 85,000 tons of steel for superstructures alone. Fresh inquiry, issued by the St. Louis-San Francisco, is for 3800 freight cars and 15 baggage and mail cars. The Burlington states its locomotive requirements at 12 passenger type and eight for freight service.

Western railroads which placed rail orders early in the fall are issuing instructions for immediate shipment. Rail mills, which on old orders have sustained output at 75 per cent of capacity, will increase production to 80 per cent in the next week.

Railroads named as probable buyers during the next week or 10 days are the New York Central, the Pennsylvania, Rock Island, Chicago & North Western and the Illinois Central.

The plate, shape and bar market is scarcely altered from a week ago, except that deliveries on many sizes may now be had in a little more than a week. Price concessions of \$1 a ton on bars and shapes appear not to have spread and, in this respect, the price structure for these commodities seems to be more stable.

Ingot output in the Chicago district still holds at 85 per cent of capacity. However, backlogs are not impressive, and some producers doubt that this rate can be sustained for long unless heavier buying and larger new releases soon come to their aid.

A blast furnace that has been held banked at Gary is again producing iron in the place of a furnace that has been blown out. This leaves only one banked stack.

**Pig Iron.**—Six merchant stacks now in blast in this district are producing a little more iron than is going forward on current shipments. The current melt is steady at the rate in effect at the end of September. Sales of Northern iron are confined to an active spot market and the closing of a few late fourth quarter contracts. Reports that the market in Michigan had dropped to \$19, base furnace, are said to be without foundation, but it is well established that going prices there are \$19.50 to \$20 a ton, base furnace, with the higher quotation holding only on small lots. It is reported here that several Lake Erie interests have closed orders for 10,000 to 15,000 tons of basic iron for delivery at Detroit. An Illinois user of Southern iron has exercised an option for 10,000 tons and a Milwaukee user has closed for 2000 tons.

### Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25...	\$20.00
N'th'n No. 1 fdy., sil. 2.25 to 2.75...	20.50
Malleable, not over 2.25 sil. ....	20.00
High phosphorus .....	20.00
Lake Super. charcoal, sil. 1.50 .....	27.04
So'th'n No. 2 fdy. (all rail) \$19.01 to 19.51	
Low phos., sil. 1 to 2, copper free...	29.50
Silvery, sil. 8 per cent. ....	29.79
Bess. ferrosilicon, 14-15 per cent...	46.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

**Sheets.**—Demand continues to run lighter, and deliveries are slowly improving. Black and galvanized sheets

may now be had in two to three weeks and the blue annealed commodity can be shipped in four weeks. The reduction in backlogs of blue annealed sheets is leading Chicago producers to enter the market for a share of going business. This is in contrast with their attitude six to eight weeks ago, when promises of delivery got so far ahead that they withdrew from the market. The price situation is little changed from a week ago. Competition in the territory served by the Ohio River has brought out galvanized sheets prices as low as 3.55c. a lb., Gary. Black sheets have recently been sold in Chicago at 3c. a lb. Consumers are not changing their policy of hand-to-mouth buying, and though local hot mill output still averages 85 to 90 per cent of capacity, it is becoming increasingly difficult to maintain this rate on the amount of business offered. Larger releases by steel shelving manufacturers are noted.

*Base prices per lb., deliv'd from mill in Chicago:* No. 24 black sheets, 3c.; No. 24 galv., 3.65c. to 3.75c.; No. 10 blue ann'd, 2.35c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

**Ferroalloys.**—This market is quiet and prices are unchanged. Several car lots of spiegeleisen have been placed at \$34, Hazard, Pa.

*Prices delivered Chicago:* 80 per cent ferromanganese, \$112.56; 50 per cent ferrosilicon, \$83.50 to \$88.50; spiegeleisen, 19 to 21 per cent, \$39.76 to \$41.76.

**Cast Iron Pipe.**—The local cast iron pipe market seems to have touched the low spot of the year. Royal Oak, Mich., is said to have placed a sizable tonnage with an unnamed bidder, and Riverside, Ill., will buy 100 tons of 12 and 16-in. pipe. Some interest is being shown by private buyers, but the aggregate tonnage is not impressive. It is reported here that Rockford, Ill., has thrown out bids on a sewage disposal plant.

*Prices per net ton, deliv'd Chicago:* Water pipe, 6-in. and over, \$43.70 to \$45.70; 4-in., \$47.70 to \$49.70; Class A and gas pipe, \$3 extra.

**Rails and Track Supplies.**—Transactions in these commodities in the week were confined to an order for 14,000 tons of track fastenings. Of special note, however, is the fact that rail mill output, now at 75 per cent of capacity, is to be stepped up to 80

per cent by the end of the coming week. Heavy purchases of standard-section rails are reported to be near at hand. Local sellers expect contracts to be placed next week by the New York Central and the Pennsylvania. The Rock Island, which took 50,000 tons a year ago, is expected in the market in the near future, and there is promise that the Illinois Central may soon buy rails, notwithstanding reports given out recently that this purchase would be made late in the year. Another purchase near at hand is that by the Chicago & North Western.

*Prices f.o.b. mill, per gross ton:* Standard section open-hearth and Bess. rails, \$43; light rails, rolled from billets, \$36. *Per lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

**Cold-Rolled Strip.**—Releases continue light, and production is barely supported between 60 and 65 per cent of mill capacity. Prices are holding on small-lot sales.

**Warehouse Business.**—Chicago warehouses are announcing lower prices on common and cement coated wire nails. The new quotations are \$2.95, base, per keg, this being a drop of 25c. a keg. Demand for steel commodities out of warehouses is fully equal to that in the previous week.

**Reinforcing Bars.**—This market is quiet both as to orders placed and fresh inquiries. Prices for billet steel reinforcing bars continue weak and mixed, occasional lots having been taken below 2.15c. a lb., Chicago warehouse. Though there have been many reports of efforts to stabilize prices, there is no evidence that measures taken thus far have been effective. Rail steel bars are quiet, with the asking price 2c. a lb. The Milwaukee Road, which estimates its track elevation needs in Chicago at 800 tons, has ordered about 150 tons in small lots. Bids on 50 tons for Illinois State buildings are to be opened Oct. 15.

**Hot - Rolled Strip.**—Buyers continue to take this commodity only as their immediate needs dictate. Bookings are unusually light for October. Prices are holding moderately well, though concessions are noted from the current quotations of 2.20c. a lb., Chicago, for 6 in. and narrower, and 2.10c. for strips wider than 6 in. Releases from automobile manufacturers are light, not only because of curtailment of output, but also because of efforts to reduce inventories. Output of hot-rolled strips ranges from 60 to 65 per cent of capacity.

**Cold-Finished Steel Bars.**—This market remains steady at 2.30c. a lb., Chicago. Contracting for fourth quarter has been in fair volume. Demand from automobile manufacturers is light, but specifications from makers of farm implements have helped to fill in cold-finished bar production schedules, and the industry is operating at close to 75 per cent of capacity.

**Plates.**—Orders for more than 85,000 tons of steel will come to Western

mills to cover car orders placed with Western shops. The Santa Fe has ordered 5754 freight cars and 51 passenger cars. The 5000 tons of steel needed for the Chicago & Eastern Illinois order will be booked locally. There is a possibility that some of the 5000 cars recently ordered by the Southern will be built in shops which draw on Chicago mills for their steel needs. New inquiry looms large as the St. Louis-San Francisco comes into the market for 2500 box, 800 gondola, 500 automobile, 10 baggage and five baggage and mail cars. The Great Northern, in announcing its budget for next year, discloses that it will build 1000 box cars at St. Cloud, Minn., 300 ore cars at Superior, Wis., and 30 locomotives at Great Falls and Hillyard, Mont. Also included in this program is the purchase of 1000 gondola cars. An oil refiner in the Southwest has ordered 3000 tons of plates, which will be fabricated into tanks by a local shop. Fresh tank inquiry is dull and outstanding projects now call for not more than 12,000 tons. The Milwaukee pipe maker has received an order for 11,000 tons of 20-in. pipe for the Southern California Edison Co. Deliveries of plates show marked improvement, with practically the full range in sizes to be had in 10 days to five weeks.

**Old Material.**—Heavy melting steel, shoveling steel and No. 2 wrought have declined 25c. a ton. Many specialties have declined, as the entire market seeks the lower level reached a week ago by heavy tonnage grades. A sale of 1000 tons of hydraulic bundles recorded a new low price of \$13 a gross ton, delivered. Rerolling rails, which were strong a week ago on a direct purchase by a steel mill from a railroad, have receded again to the general level of the market. Short rails are also easier. Consumers' commitments in the last few weeks have given brokers sizable books, and it is quite evident that sellers are now taking more interest in covering old business than in accumulating orders for future deliveries. Steel foundries in this district have

sizable books and are taking scrap freely. Use of scrap by malleable foundries is spotty, though there are some foundries in this class that are pressing for deliveries. Requirements of gray iron foundries are still in fair volume, but decidedly more spotty than a week ago. The break in prices paid by consumers is being followed by lower prices paid to the railroads. The Santa Fe is said to have received \$17 a ton, delivered, for malleable and \$13.25 for No. 1 wrought. The Chicago & Alton has sold 1000 tons of scrap and the Pere Marquette 3000 tons.

**Prices deliv'd Chicago district consumers:  
Per Gross Ton**

Basic Open-Hearth Grades:	
Heavy melting steel.....	\$14.25 to \$14.75
Shoveling steel.....	14.25 to 14.75
Frogs, switches and guards, cut apart, and misc. rails	15.75 to 16.25
Hydral. compressed sheets	12.50 to 13.00
Drop forge flashings.....	10.75 to 11.25
No. 1 busheling.....	12.75 to 13.25
Forg'd cast and p'd steel	
car wheels.....	18.50 to 19.00
Railroad tires, charg. box size.....	18.50 to 19.00
Railroad leaf springs cut apart.....	18.50 to 19.00
Acid Open-Hearth Grades:	
Steel couplers and knuckles	17.00 to 17.50
Coil springs.....	19.00 to 19.50
Electric Furnace Grades:	
Axle turnings.....	14.25 to 14.75
Low phos. punchings.....	16.50 to 17.00
Low phos. plates, 12 in. and under.....	16.50 to 17.00
Blast Furnace Grades:	
Axle turnings.....	12.00 to 12.50
Cast iron borings.....	10.00 to 10.50
Short shoveling turnings.....	10.00 to 10.50
Machine shop turnings.....	7.00 to 7.50
Rolling Mill Grades:	
Iron rails.....	16.00 to 16.50
Rerolling rails.....	16.75 to 17.25
Cupola Grades:	
Steel rails less than 3 ft.....	17.50 to 18.50
Steel rails less than 2 ft.....	19.50 to 20.00
Angle bars, steel.....	17.00 to 17.50
Cast iron car wheels.....	14.00 to 14.50
Malleable Grades:	
Railroad.....	17.00 to 17.50
Agricultural.....	15.50 to 16.00
Miscellaneous:	
*Relaying rails, 56 to 60 lb.....	23.00 to 25.00
*Relaying rails, 65 lb. and heav.....	26.00 to 31.00

**Per Net Ton**

Rolling Mill Grades:	
Iron angle and splice bars	15.00 to 15.50
Iron arch bars and transoms.....	20.50 to 21.00
Iron car axles.....	26.00 to 26.50
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	12.75 to 13.25
No. 1 busheling.....	9.00 to 9.50
No. 2 busheling.....	7.00 to 7.50
Locomotive tires, smooth.....	14.50 to 15.00
Pipes and flues.....	10.00 to 10.50
Cupola Grades:	
No. 1 machinery cast.....	14.50 to 15.00
No. 1 railroad cast.....	14.00 to 14.50
No. 1 agricultural cast.....	13.25 to 13.75
Stove plates.....	12.25 to 12.75
Grate bars.....	11.75 to 12.25
Brake shoes.....	10.75 to 11.25

\*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

**Bars.**—Both new buying and specifications for mild steel bars compare favorably with shipments. Needs of farm implement manufacturers are heavier and enlarged schedules are in the making. It is reported here that heavier production of automobiles is planned for November. In the meantime, the only live spots in demand are in shops where new models are going into production. Backlogs in rail steel bars are shrinking. Specifications continue to match shipments, but new buying, both for nearby and

future needs, has tapered rather sharply. Announcements of fall terms on fence posts are not yet productive of larger orders.

**Structural Material.**—Building contracts continue to drag in the immediate Chicago territory, but in outlying districts prospects look brighter. A power plant in central Illinois has added 3800 tons to steel makers' books. Included in new work in sight are 3000 tons for a new hotel at Oklahoma City, Okla., 2000 tons for an addition to the Union Station, Omaha, Neb., and 4000 tons for the Northwestern Mutual Life Building, Milwaukee. A meeting which had been called for this week by the Chicago Board of Education has been postponed and it may be several weeks before a decision is reached as to the placing of a 3500-ton contract for a new junior high school.

Mill prices on plain material, per lb.: 2.95c. base, Chicago.

**Wire Products.**—Nail demand is under 50 per cent of normal for this time of the year. Prices continue weak. Shipments of manufacturers' wire to other than automobile plants is in good volume. Jobbers report improvement in fall trade, but still hesitate to carry suitable stocks and are pressing mills for prompt deliveries of small orders. Output by wire mills still stands at 65 per cent of capacity, at which rate producers are able to build stocks.

**Bolts, Nuts and Rivets.**—This market is holding to the gains noted a week ago. Prices are steady on small-lot sales.

**Coke.**—All ovens in this district are lighted and shipments of by-product foundry coke are fully equal to production. Prices are firm at \$8 a ton, local ovens.

## Detroit Scrap Declines

DETROIT, Oct. 15.—A decline of 25c. a ton has occurred on most grades of old material in this district during the past week. No sales of importance are reported.

Automotive production is at the low point for the year, with indications that some new models will be in the foundry in November, with accompanying increase in melt.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Hvy. melting and shov. steel.....	\$13.75 to \$14.25
Borings and short turnings.....	8.25 to 8.75
Long turnings.....	8.00 to 8.50
No. 1 machinery cast.....	12.50 to 13.00
Automobile cast.....	13.00 to 13.50
Hydral. comp. sheets.....	13.75 to 14.25
Stove plate.....	9.00 to 9.50
New No. 1 busheling.....	11.75 to 12.25
Old No. 1 busheling.....	10.25 to 10.75
Sheet clippings.....	8.00 to 8.50
Flashings.....	12.25 to 12.75

Industrial & Combustion Engineering Corporation, 303 Protective Life Building, Birmingham, has been appointed district engineer for the Despatch Oven Co., Minneapolis, Minn. The district includes Alabama, Georgia, Mississippi and Tennessee.

## Warehouse Prices, f.o.b. Chicago

Base per Lb.	
Plates and structural shapes.....	3.10c.
Soft steel bars.....	3.00c.
Reinforc'g bars, billet steel.....	2.10c. to 2.35c.
Reinforc'g bars, rail steel.....	1.85c. to 2.00c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Bands (5/8 in. in Nos. 10 and 12 gages).....	3.20c.
Hoops (No. 14 gage and lighter).....	3.75c.
Black sheets (No. 24).....	4.05c.
Galv. sheets (No. 24).....	4.90c.
Blue ann'l'd sheets (No. 10).....	3.35c.
Spikes, 5/8 in. and larger.....	3.55c.
Track bolts.....	4.55c.
Rivets, structural.....	4.00c.
Rivets, boiler.....	4.00c.
Per Cent Off List	
Machine bolts.....	60
Carriage bolts.....	60
Coach or lag screws.....	60
Hot-pressed nuts, sq., tap. or blank.....	60
Hot-pressed nuts, hex., tap. or blank.....	60
No. 8 black ann'l'd wire, per 100 lb.....	\$3.45
Com. wire nails, base per keg.....	2.95
Cement c'd nails, base per keg.....	2.95

# New York

## Line Pipe Inquiries Upward of 20,000 Tons—Structural Steel Market Active—Prices Weaker

NEW YORK, Oct. 15.—Pig iron buyers are not pressing to cover their forward requirements, but purchases for nearby needs, in many cases to supplement previous orders, are in fair volume. Sales for the week, at 10,000 tons, compare with a total of 9000 tons in the previous week. In the absence of a broad buying movement and pending the development of interest in first quarter iron, sellers find it necessary to search for business. It is not surprising that prices have become somewhat more flexible, with \$17.50, base Buffalo, occasionally shaded on foundry iron. Less Southern iron is being sold, but it is understood that Alabama furnaces are prepared to compete actively for first quarter tonnage when it comes into the market. Melt in this territory is holding up well. In some instances, foundries are pressing for shipments, indicating that their stocks are low; in other cases, November specifications have already been received by furnaces. All in all, increases in melt by some consumers tend to offset decreases by others. The New York Air Brake Co. is in the market for 600 tons of malleable for its Watertown, N. Y., plant. It is reported that another moderate-sized consignment of Dutch iron will soon be shipped to Bridgeport, Conn. The cargo has already been sold. Dutch foundry is quoted at \$22.75, duty paid port of entry, for No. 1X and lower grades. The Port Henry, N. Y., furnace, which has been out for relining, is scheduled to blow in today.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75	
to 2.25	\$22.41 to \$22.91
*Buf. No. 2, del'd east.	
N. J.	20.78 to 21.28
East. Pa. No. 2 fdy., sil.	
1.75 to 2.25	19.89 to 21.02
East. Pa. No. 2X fdy., sil.	
2.25 to 2.75	20.39 to 21.52

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

\*Prices delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

**Finished Steel.**—Most of the local steel sales offices report improved buying in the past week. While no spectacular gain in orders has occurred, the rise in some instances has been quite noticeable as compared with preceding weeks. Moreover, inquiries are better, especially for pipe. One inquiry calls for about 300 miles of 4, 6 and 8-in., totaling upward of 20,000 tons, and other scattered inquiries total several thousand tons. An Eastern contracting company is taking prices on 4000 tons of plates for a pipe line in Cleveland. Fresh structural inquiries in the New York district call for a total of 19,500 tons, on top of the 63,000 tons reported in the week before. New pending work includes 9400 tons for the Salmon Building, Fifth Avenue at Forty-second Street, and 6800 tons for new subway work, making a total of 23,800

tons for subways now pending. The Pennsylvania Railroad is in the market for 7500 tons for a viaduct and suburban stations in Philadelphia. Awards have been light in the past week, but the outlook for building construction in the next several months is reported by fabricators to be exceptionally good. In the nine months ended Sept. 30, the total for the New York district of structural steel work for buildings, and not including subways, bridges, etc., was 423,501 tons, according to the Structural Steel Board of Trade of New York, compared with 458,259 tons for all of 1928. New orders for railroad cars placed in the East include 2500 for the Baltimore & Ohio. The steel price structure shows increasing weakness, especially on the large tonnage projects. Structural shapes are obtainable by most buyers at 2.14½c., delivered, with some large users getting still lower prices. No. 13 gage blue annealed sheets are being sold to the larger buyers at 2.25c., Pittsburgh, by some mills, though others are holding for 2.35c., and the latter price applies in most instances on small orders. No. 10 gage blue annealed ranges from 2.10c. to 2.20c., but the material above 24-in. wide rolled on continuous mills is being sold frequently at as low as 2c., Pittsburgh. Hot-rolled strip steel has been sold at concessions of \$2 a ton to large buyers. In the main, however, strip prices remain fairly steady. Buyers have attempted to obtain concessions on plates, but except for the large tonnages, on which concessions are usually obtainable, there appears to be no marked change in the price situation on this product.

Mill prices per lb., deliv'd New York: Soft steel bars, 2.24c. to 2.29c.; plates, 2.22½c.; structural shapes, 2.14½c.; bar iron, 2.14c.

**Reinforcing Bars.**—Bookings this month have been at a somewhat higher rate than in September. The Concrete Steel Co. has taken three jobs nearby which will require a total of 400 tons of bars. A third subway section is now out for bids, making about 1000 tons of bars which will be awarded shortly for New York subway work. Although new billet bars are generally priced at 2.05c., Pittsburgh, a few contracts are reported to have been made at \$4 to \$6 a ton under that figure.

Billet steel reinforcing bars in 40, 50 and 60 ft. lengths, 2.05c. per lb., Pittsburgh, and 2.30c. per lb., Pittsburgh warehouse, for cut lengths. Out of New York warehouse, 2.90c. per lb. for lots of 5 tons or more, 3.05c. for lots of 2 to 5 tons and 3.30c. for less than 2 tons, all delivered at job.

**Cast Iron Pipe.**—Buying of pressure pipe is limited to small tonnages and prices are generally unchanged. Hartford, Conn., has awarded about 350 tons of centrifugal pipe to one Southern maker and about 20 tons of fittings to another. Newburgh, N. Y.,

has placed 125 tons of water pipe with the Warren Foundry & Pipe Co., the low bid having been \$36.45 a net ton, delivered. Inquiry for pipe from private companies continues small and is not expected to show much im-

## Warehouse Prices, f.o.b. New York

	Base per Lb.	
Plates and structural shapes.....	3.30c.	
Soft steel bars, small shapes.....	3.25c.	
Iron bars.....	3.24c.	
Iron bars, Swed. charcoal.....	7.00c. to 7.25c.	
Cold-fin. shafting and screw stock—		
Rounds and hexagons.....	3.60c.	
Flats and squares.....	4.10c.	
Cold-roll, strip, soft and quarter		
hard.....	5.15c. to 5.40c.	
Hoops.....	4.25c.	
Bands.....	2.75c.	
Blue ann'd sheets (No. 10).....	3.50c. to 3.90c.	
Long terme sheets (No. 24).....	5.80c.	
Standard tool steel.....	12.00c.	
Wire, black annealed.....	4.50c.	
Wire, galv. annealed.....	5.15c.	
Tire steel, ½ x ½ in. and larger.....	3.40c.	
Smooth finish, 1 to 2½ x ¼ in.		
and larger.....	3.75c.	
Open-hearth spring steel, bases,		
4.50 to 7.00c.		
Machine bolts, cut threads:	Per Cent	Off List
¾ x 6 in. and smaller.....	60	
1 x 30 in. and smaller.....	50 to 50 and 10	
Carriage bolts, cut thread:		
½ x 6 in. and smaller.....	60	
¾ x 20 in. and smaller.....	50 to 50 and 10	
Coach screws:		
½ x 6 in. and smaller.....	60	
1 x 6 in. and smaller.....	50 to 50 and 10	
Boiler Tubes—	Per 100 Ft.	
Lap welded, 2-in.....	\$17.33	
Seamless steel, 2-in.....	20.24	
Charcoal iron, 2-in.....	25.00	
Charcoal iron, 4-in.....	67.00	
Discounts on Welded Pipe		
Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-3 in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	5	+19
¾-in. butt.....	11	+ 9
1-1½-in. butt.....	14	+ 6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+ 6
7-12-in. lap.....	3	+16

	Prime	Seconds
Coke, 100 lb. base box...	\$6.45	\$6.20
Charcoal, per Box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00

	Terne Plate (14 x 20 in.)
IC—20-lb. coating.....	\$10.00 to \$11.00
IC—30-lb. coating.....	12.00 to 13.00
IC—40-lb. coating.....	13.75 to 14.25

	Sheets, Box Annealed—Black, C. R.	One Pass	Per Lb.
Nos. 18 to 20.....	3.75c. to 3.80c.		
No. 22.....	3.90c. to 3.95c.		
No. 24.....	3.95c. to 4.00c.		
No. 26.....	4.05c. to 4.10c.		
No. 28*	4.20c. to 4.25c.		
No. 30.....	4.45c. to 4.50c.		

	Sheets, Galvanized	Per Lb.
No. 14.....	4.20c. to 4.40c.	
No. 16.....	4.15c. to 4.25c.	
No. 18.....	4.20c. to 4.40c.	
No. 20.....	4.30c. to 4.50c.	
No. 22.....	4.40c. to 4.60c.	
No. 24.....	4.65c. to 4.75c.	
No. 26.....	4.90c. to 5.00c.	
No. 28*	5.15c. to 5.25c.	
No. 30.....	5.55c. to 5.65c.	

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

provement until buying for spring delivery begins late in the fall.

**Prices per net ton deliv'd New York:** Water pipe, 6-in. and larger, \$34.60 to \$36.60; 4-in. and 5-in., \$37.60 to \$39.60; 3-in., \$44.60 to \$46.60. Class A and gas pipe, \$3 extra.

**Warehouse Business.**—Buying from stock has been fairly active this month. Demand for structural material, steel bars and black sheets is active, but galvanized sheets have been quiet in the past week or more, and prices continue weak. Concessions of \$2 and more a ton are not uncommon.

**Coke.**—Furnace coke is firmer, the standard furnace grade being quoted at about \$2.75 a net ton, Connellsville, Beehive foundry coke is unchanged at \$4.85 a net ton, ovens, for special brands, or \$8.56, delivered to northern New Jersey, Jersey City and Newark, and \$9.44 to New York and Brooklyn. In the by-product coke field, foundry coke production will shortly be increased by the addition of this grade to the Koppers operation at Swedeland, Pa. In the past, these ovens have produced only furnace and sized coke. By-product foundry coke is quoted at \$9 to \$9.40 a net ton, Newark or Jersey City, and \$10.06, New York or Brooklyn.

**Old Material.**—Although consumers in eastern Pennsylvania are either temporarily out of the market or of-

fering to buy scrap only at reductions from recent purchase prices, brokers' buying prices are generally unchanged. No. 1 heavy melting steel is being shipped on contracts to Coatesville, Pa., and Bethlehem, Pa., brokers paying \$15.50 a ton, delivered. The mill at Claymont, Del., has not been accepting shipments in the past week. No. 2 heavy melting steel prices have receded slightly and are now \$13 to \$13.50 a ton, delivered, and a sufficient supply is reported to be available at these prices.

**Dealers' buying prices per gross ton, f.o.b. New York:**

No. 1 heavy melting steel	\$12.00 to \$12.85
Heavy melting steel (yard)	8.00 to 9.50
No. 1 hvy. breakable cast	10.25 to 11.00
Stove plate (steel works)	8.00 to 8.25
Locomotive grate bars	8.25 to 8.75
Machine shop turnings	7.50 to 8.00
Short shoveling turnings	7.50 to 8.00
Cast borings (blast furn. or steel works)	7.00 to 7.75
Mixed borings and turnings	6.75 to 7.75
Steel car axles	18.50 to 19.50
Iron car axles	23.00 to 24.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)	10.25
Forge fire	9.50 to 10.00
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought, long	11.00 to 11.50
Rails for rolling	12.75 to 13.25
Stove plate (foundry)	8.00 to 8.50
Malleable cast (railroad)	13.50 to 14.00
Cast borings (chemical)	9.50 to 10.00

**Prices per gross ton, deliv'd local foundries:**

No. 1 machry. cast	\$16.00 to \$16.50
No. 1 hvy. cast (columns, bldg. materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	13.50 to 14.00

Shipments to automotive foundries are spotty. Consumers in other fields are taking a fair amount of iron and some producers expect to ship a little more this month than in September. Cleveland quotations are unchanged at \$18.50, furnace, for outside shipment and \$19 for local delivery. While \$20, base, is still the ruling quotation in Michigan, this price has been shaded to \$19.50, or 50c. has been cut off the silicon extra on some business in central and western Michigan to meet a \$19.50 price that is being quoted from Chicago and attributed to sellers of boat iron.

**Prices per gross ton at Cleveland:**

N'th'n fdy., sil. 1.75 to 2.25	\$19.50
S'th'n fdy., 1.75 to 2.25	\$19.50 to 20.00
Malleable	19.50
Ohio silvery, 8 per cent.	28.00
Basic Valley furnace	18.50
Stand. low phos., Valley	26.50 to 27.00

Prices except on basic and low phosphorus are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

**Iron Ore.**—There has been a fair amount of late season buying of Lake Superior ore recently for fill-in purposes in lots up to 50,000 tons. Buying is thought to be about over for the season. Shipments show a moderate decline from September.

**Semi-Finished Steel.**—Specifications for sheet bars gained slightly during the week due to releases from two or three mills that have picked up some new sheet orders from the automotive industry. Shipments are being made against \$35 contracts. Wire rods are firm at \$40, Cleveland.

**Strip Steel.**—Demand continues light, both for hot and cold-rolled strip. Some of the hot rolling mills are not operating at more than 60 per cent of capacity and cold-rolling mills are even less favorably situated. Consumers are ordering from hand-to-mouth and not much gain in volume is looked for until the automotive industry picks up. Hot-rolled strip, while untested on round lot business, appears to be holding to the regular quotations of 1.90c., Pittsburgh, for wide and 2c. for narrow strip. Mills are maintaining the 2.75c., Cleveland, price for cold-rolled strip and some are still trying to get 2.85c. for small lots.

**Bars, Plates and Shapes.**—Demand for steel bars continues light, as mills are not getting much tonnage from the automotive industry. Structural

## Cleveland

### Steel Demands Light and Prices Weaken—No Important Gain in Automobile Industry Expected This Year

CLEVELAND, Oct. 15.—Demand for all lines of finished steel continues light. The steel industry has been counting on a revival of automobile manufacturing this month, but a pickup of any proportions is not in sight, and the general opinion is that automobile production will remain rather slow the remainder of the year.

With further retrenchment by some of the car builders to change over to their new models, the production of automobiles is still declining. However, a few of the automobile manufacturers have placed orders for round lots of sheets for November delivery and some increase is looked for in the output of motor cars late in November.

Sheet mills have cleaned up on shipments of material for Chevrolet bodies, and during the week received releases of good tonnages of sheets for bodies for this company's new cars. Shipments of this material are to start Nov. 4. Automobile parts makers as yet have received few orders for parts for new cars.

Steel production has been further curtailed. The leading local producer of steel bars is now operating at about 75 per cent of capacity and some of the sheet and hot and cold-rolled strip mills are down to about 50 per cent.

While there are still price irregularities, the market shows little change in this respect from a week ago. The steel bar price situation appears to have been clarified by the adoption of a 1.90c., Cleveland, base by local mills. Some weakness has developed in plates.

**Pig Iron.**—The Ford Motor Co. on Saturday purchased 17,000 tons of basic pig iron for October shipment. While the source of the iron was not announced, it is understood that

it will be shipped by water and presumably will come from a Lake furnace. Additional purchases of high silicon foundry iron have been made by the Ford company, making the reported total of 16,000 tons over the past three of four weeks. This company is not yet through buying iron for this year's delivery, but probably will conclude its purchases in time to have the iron shipped by water before the close of the season of Lake navigation. The market was dull the past week, sales by Cleveland interests amounting to 13,600 tons, as compared with over 32,000 tons during the previous week. There is little buying by foundries in the automotive field as these feel the effects of the slackening of the automotive industry.

#### Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and struc. shapes	3.00c.
Soft steel bars	3.00c.
Reinforce. steel bars	2.25c. to 2.50c.
Cold-fin. rounds and hex.	3.65c.
Cold-fin. flats and sq.	4.15c.
Hoops and bands, No. 12 to 14 in., inclusive	3.25c.
Hoops and bands, No. 13 and lighter	3.65c.
Cold-finished strip	5.95c.
Black sheets (No. 24)	3.70c. to 3.90c.
Galvanized sheets (No. 24)	4.60c. to 4.75c.
Blue ann'd sheets (No. 10)	3.25c.
No. 9 ann'd wire, per 100 lb.	\$2.65
No. 9 gal. wire, per 100 lb.	3.00
Com. wire nails, base per keg	2.65

\*Net base, including boxing and cutting to length.

material and plates are in fair demand from manufacturing industries. The building field is very quiet. The Cleveland Water Works Department has taken bids for extensions requiring 4000 tons of plates, and Detroit will ask for bids shortly for five miles of pipe, half 54 in. and half 66 in. of ½-in. plate. The Consumers Power Co., Jackson, Mich., has placed with two mills orders for 1700 tons of sheet steel piling for permanent use in dam work. The Cleveland mill price on steel bars has settled to 1.90c., mill. Pittsburgh district mills are trying to hold to 1.95c., Cleveland, for steel bars for delivery in this territory. Plates have been shaded to 1.90c., Pittsburgh. On shapes, 1.95c., Pittsburgh, is the ruling quotation.

**Sheets.**—Orders for good-sized lots of sheets have been placed by at least three automobile companies and with this business several mills have considerable more tonnage on their books than at the first of the month. There is fair demand from other sources, including refrigerator, stove and metal furniture manufacturers. No further price weakness has developed. Black sheets are holding at 2.75c., Pittsburgh, and galvanized at 3.50c. Continuous mills are quoting blue annealed sheets at 2.10c. for No. 10 and at 2.25c. for No. 13, and these prices have been shaded \$2 a ton for attractive orders in the Detroit territory. However, jobbing mills seem to be holding to regular quotations on blue annealed sheets.

**Wire Products.**—Demand is dull and prices are still weak, particularly where there is competition from Ohio River and Indiana mills. The ruling quotations are \$2.45 a keg for nails and 2.40c. a lb. for wire. Jobbers have sharply reduced prices for shipment out of stock to meet this situation.

**Warehouse Business.**—The volume is rather light, showing no improvement over last month. Orders are fair in number but are mostly for small lots. There is a good seasonal demand for galvanized sheets. Prices are firm.

**Cold-Finished Steel Bars.**—Specifications are very light for material used in the automotive industry, but orders from other consumers show some gain. The market is firm.

**Coke.**—By-product coke for domestic use is moving well and some of the producers have their entire output sold for this month. Prices are unchanged at \$4.75, Ohio ovens, for egg and \$4.50 for nut size, but producers are talking of an advance Nov. 1. Foundry coke is quiet. Ohio by-product foundry coke is quoted at \$8.25 ovens.

**Old Material.**—The market is weak and very dull. No new demand has come from the mills and dealers are not buying much scrap to fill old orders. Heavy melting steel in lighter grades has declined 25c. a ton and blast furnace scrap has similarly declined, losing a portion of its recent gain. The slowing down in the automotive industry is reflected in a sharp reduction in the amount of scrap coming out of the Detroit territory.

*Prices per gross ton delivered consumers' yards:*

Basic Open-Hearth Grades:	
No. 1 heavy melting steel	\$14.75 to \$15.00
No. 2 heavy melting steel	14.25 to 14.50
Compressed sheet steel	14.75 to 15.25
Light bundled sheet stampings	12.00 to 12.50
Drop forge flashings	13.00 to 13.25
Machine shop turnings	10.00 to 10.50
Short shoveling turnings	11.50 to 12.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	16.00 to 16.50
No. 1 busheling	13.25 to 13.75
Pipes and flues	9.00 to 9.50
Steel axle turnings	12.50 to 13.00
Acid Open-Hearth Grades:	
Low phos., forging crops	17.75 to 18.00
Low phos., billet, bloom and slab crops	18.50 to 18.75
Low phos., sheet bar crops	18.00 to 18.50
Low phos., plate scrap	18.00 to 18.50
Blast Furnace Grades:	
Cast iron borings	10.50 to 11.00
Mixed borings and short turnings	10.50 to 11.00
No. 2 busheling	10.50 to 10.75
Cupola Grades:	
No. 1 cast	17.50 to 18.00
Railroad grate bars	11.00 to 12.00
Stove plate	12.00 to 12.50
Rails under 3 ft.	18.50 to 19.50
Miscellaneous	
Railroad malleable	18.00 to 18.50
Rails for rolling	16.25 to 16.50

naces today is about \$13.50, furnace, and certain sellers are maintaining \$14 a ton, base. On 100 tons of low phosphorus iron, bids on which were recently opened by the Panama Canal Commission, Washington, the Bethlehem Steel Co. was low bidder and the Delaware River Steel Co. next. No other furnaces quoted on the business. The Virginia furnace will not be ready to go into blast until about the end of this month. Present plans are to offer both sand and machine cast pig iron and compete with the Birmingham producers in the sand cast grade. Consumers of basic in this district are not expected to buy before Nov. 1.

*Prices per gross ton at Philadelphia:*

East. Pa. No. 2, 1.75 to 2.25 sil.	\$21.26 to \$21.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.26
East. Pa. No. IX	22.26 to 22.76
Basic (del'd east. Pa.)	19.75 to 20.25
Gray forge	20.00 to 20.50
Malleable	21.25 to 21.75
Stand. low phos. (f.o.b. N. Y. State furnace)	22.00 to 23.00
Cop. br'g low phos. (f.o.b. furnace)	23.50 to 24.00
Va. No. 2 plain, 1.75 to 2.25 sil.	24.04
Va. No. 2X, 2.25 to 2.75 sil.	24.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

**Bars.**—Business is limited to small orders, in most cases at the new level of 1.90c. a lb., Pittsburgh, or 2.22c., delivered Philadelphia. Contracts for bars are being generally revised to the new basis, which is apparently firm in this district.

**Reinforcing Bars.**—Some substantial tonnages of bars are being placed with distributors and both billet steel and rail steel grades are being furnished. Billet steel bars are quoted at 1.95c. to 2.05c., Pittsburgh, or 2.27c. to 2.37c., delivered Philadelphia, usually with no extra for cutting to length. Rail steel bars range from 1.90c. to 1.95c., Franklin, Pa., and Tonawanda, N. Y., or 2.22c. to 2.27c., delivered Philadelphia, with no extra for cutting to length. Occasionally the rail steel bar quotation is shaded by \$1 a ton or more to secure desirable contracts. Pending projects in this district are 500 tons of bars for a sewer and bulkhead on Spring Gar-

## Philadelphia

### Demand for Shapes Improves with Prices Still Unstable— Pennsylvania Rails To Be Allocated This Week

PHILADELPHIA, Oct. 15.—Steel business continues irregular, products such as bars and sheets, which enter into automotive manufacture, being decidedly inactive, while plates and shapes are in moderate demand. Plate orders are limited to small tonnages, but shape mills have had a slight increase in the volume of orders since the beginning of this month. Despite this improvement, shape prices are lacking in firmness and cover a rather wide range.

The Pennsylvania Railroad is expected to allocate its 310,000 tons of rails for next year by the end of this week, and will open bids tomorrow on about 14,000 tons of structural steel for the West Philadelphia terminal viaducts and suburban station. The terminal building itself, which is not yet being inquired for, will require an additional 14,000 tons of steel.

**Pig Iron.**—Foundry iron is still quoted by eastern Pennsylvania furnaces at \$21, base furnace, but with shipments of iron slightly in excess of new contracts an increased willing-

ness has been evident to shade this price by 50c. a ton or more. Competition is still encountered from Southern sellers of pig iron, but the minimum quotation of Birmingham fur-

### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.70c.
Plates, ⅜-in.	2.90c.
Structural shapes	2.70c.
Soft steel bars, small shapes, iron bars (except bands)	2.80c.
Round-edge iron	3.50c.
Round-edge steel, iron finished 1½ x 1½ in.	3.50c.
Round-edge steel planished	4.30c.
Reinforc. steel bars, sq. twisted and deform.	2.60c. to 2.80c.
Cold-fin. steel, rounds and hex.	3.60c.
Cold-fin. steel, sq. and flats	4.10c.
Steel hoops	3.55c.
Steel bands, No. 12 to ⅜-in. inclus.	3.20c.
Spring steel	5.00c.
*Black sheets (No. 24)	4.10c.
†Galvanized sheets (No. 24)	4.85c.
Light plates, blue annealed (No. 10)	3.25c.
Blue ann'd sheets (No. 13)	3.40c.
Diam. pat. floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

\*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.  
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

den Street, Philadelphia, and 140 tons in a freight warehouse for the Pennsylvania Railroad at Harrisburg.

**Plates.**—Orders and specifications against contracts are in fair volume, but tonnages are small. Consumers of plates in this district are well engaged, especially boiler shops, most of which have sufficient business to carry them into next year. The price is being maintained at 2.05c., Coatesville, Pa., or 2.15c., delivered Philadelphia.

**Shapes.**—Fabricating shops are well occupied, in some cases having enough tonnage for the rest of the year. New fabricated projects are plentiful and shape mills have been booking a slightly increased volume of business this month. Prices, however, are still unstable, ranging from 1.90c., f.o.b. nearest mill to consumer, or 1.96c., delivered Philadelphia, to 2c., f.o.b. mill, or 2.06c., delivered Philadelphia. Occasionally less than 1.90c., f.o.b. mill, is quoted on desirable business.

**Sheets.**—Black and galvanized sheet prices are lacking in firmness and recent business, although for only moderate-sized tonnages, has been at 2.75c., Pittsburgh, or 3.07c., delivered Philadelphia, for black and 3.50c., Pittsburgh, or 3.82c., delivered Philadelphia, for galvanized. Blue annealed sheets are also inactive, but the prices are unchanged at 2.35c., Pittsburgh, or 2.67c., delivered Philadelphia, for No. 13 gage and 2.20c., Pittsburgh, or 2.52c., Philadelphia, for No. 10 gage blue annealed plates. To preferred buyers, or when competition is encountered from sheets made on the continuous mill, concessions of \$2 a ton and more to 2.25c. for No. 13 gage, and 2.10c. for No. 10 gage, are usually made. Automobile body builders are still inactive, while awaiting the

specifications on the new models of two prominent makers, with whom they have contracts. Meanwhile, commercial body builders have been increasing their output slightly. Radio manufacturers are becoming less active, as the end of their season of heaviest manufacture approaches.

**Imports.**—In the week ended Oct. 11, arrivals at this port consisted of 20 tons of structural shapes from Germany and 9 tons of steel rods from Sweden.

**Old Material.**—A large eastern Pennsylvania consumer of scrap has bought a sizable tonnage of No. 1 heavy melting steel at \$15.50 a ton, delivered eastern Pennsylvania. Specification pipe is off 50c. a ton, on the basis of a purchase by a Lebanon, Pa., mill at \$14.50 a ton, delivered, and No. 1 heavy melting steel is quotable at \$15.50 to \$16 a ton, delivered.

*Prices per gross ton delivered consumers' yards, Philadelphia district:*

No. 1 heavy melting steel	\$15.50 to \$16.00
Scrap T rails	15.00 to 15.50
No. 2 heavy melting steel	12.50 to 14.25
No. 1 railroad wrought	16.00 to 16.50
Bundled sheets (for steel works)	11.50
Hydraulic compressed, new	14.50 to 15.00
Hydraulic compressed, old	12.00 to 12.50
Machine shop turnings (for steel works)	12.00
Heavy axle turnings (or equiv.)	14.00 to 14.50
Cast borings (for steel works and roll. mill)	11.00 to 11.75
Heavy breakable cast (for steel works)	14.50 to 14.75
Railroad grate bars	12.00 to 12.50
Stove plate (for steel works)	12.00 to 12.50
No. 1 low phos., hvy., 0.04% and under	22.00 to 23.00
Couplers and knuckles	19.50 to 20.50
Rolled steel wheels	19.50 to 20.50
No. 1 blast furnace scrap	10.50 to 11.00
Wrot. iron and soft steel pipes and tubes (new specific.)	14.50
Shafting	19.00 to 19.50
Steel axles	23.00 to 23.50
No. 1 forge fire	14.00
Cast iron carwheels	16.50 to 17.00
No. 1 cast	16.00 to 16.50
Cast borings (for chem. plant)	14.50
Steel rails for rolling	16.50 to 17.00

clared, will pay their full combinations, while Pittsburgh and Chicago will pay 7 per cent and 23 per cent less than their respective combinations.

Rates suggested for iron and steel articles to Dallas were: From Pittsburgh, 90c.; from Steelton, 76c.; from Bethlehem, 73c., and from Baltimore, 70c. It was declared that the suggested basis would treat all shippers and destinations alike as to the water factor in their through rates. The rates proposed on iron and steel articles generally are: From Pittsburgh, 93c.; from Steelton, 86c.; from Bethlehem, 82.5c. and from Baltimore, 75.5c. The per cent of combinations under the suggested basis would be 90 for Pittsburgh; 88.4 for Steelton; 88.4 for Bethlehem and 92.7 per cent for Baltimore.

## Youngstown Mills at 75 Per Cent

YOUNGSTOWN, Oct. 15.—Steel makers in this district believe that the low point in the current automobile demand has been passed and that improvement will be registered from now on. Independent steel companies are averaging 75 per cent operation. The number of active sheet mills shows a moderate increase this week.

## Ford to Have Record Size 1350-Lb. Boilers

The Ford Motor Co., Detroit, has bought of the Combustion Engineering Corporation, New York, for the Fordson plant two steam generating units, designed for 1350 lb. steam pressure superheated to 750 deg. Fahr. Each unit will have a maximum capacity of 700,000 lb. of steam an hour, a capacity believed to be the highest yet built for pressures as high as 1350 lb.

The boiler units will be fired by pulverized coal, the fuel entering the furnaces tangentially at the corners to give a turbulent mixing action of fuel and air for combustion. The furnaces will be of the all metal, water-cooled type and air preheaters will be installed to use the heat of the exit gases for preheating the air used for combustion.

## Newton Steel Earnings \$472,770 in Third Quarter

Net profits of the Newton Steel Co. for the third quarter totaled \$472,770, after all charges, comparing with net of \$799,923 for the second quarter and \$719,692 for the first quarter. The company's statement shows a deduction of \$64,468 for the quarter for Federal income taxes.

H. D. Conkey & Co., Mendota, Ill., manufacturer of overhead traveling crane equipment, has appointed the Cleveland Tool & Supply Co. as its agent in the Cleveland district.

## Eastern Mills Oppose Rail-Water Rates Say Proposed Combinations in Examiner's Report Are Most Favorable to Pittsburgh and Chicago

WASHINGTON, Oct. 15.—Eastern steel manufacturers, through the Bethlehem Steel Co., have filed exceptions with the Interstate Commerce Commission against the examiner's report in the so-called Consolidated Southwestern cases as it would affect iron and steel rates from interior trunk line points to interior Southwestern points, a suggested basis for which was incorporated in the Bethlehem brief.

The contention was made that the proposed rates would subject Eastern mills to excessive and prejudicial rates in exacting the full combination of the locals to interior Southwestern points while according to Pittsburgh and other competing origins through rates less than their combinations. The Eastern steel shipper, it was stated, is vitally interested in securing rates to the Southwest by way of the ocean routes which are no higher than is reasonable and non-

prejudicial as compared with rates from competing origins.

The following table was cited to show the rates in cents per 100 lb. on structural steel to Dallas that would result if the report is approved:

From	Rail-Water Rail Com- bination	Effective Rate if Proposed Report is Approved	Dif- ference
Pittsburgh	100.5	93	7.5
Chicago	93	71	22
Steelton	84	84	0
Bethlehem	84.5	84.5	0
Baltimore	75.5	75.5	0

It was pointed out that Pittsburgh would be brought within 15.5c. of Baltimore, while the present local rate is 31c., and would be brought within 8.5c. of Bethlehem, while the present difference in their rates to Philadelphia is 19c., and under the adjustment prescribed in the Eastern general steel rate case it will be 17c. Bethlehem, Steelton, Baltimore and all similar Eastern points, it was de-

## Pacific Coast

### Long Beach, Cal., Places 4285 Tons of Cast Iron Pipe—Los Angeles Building Takes 3000 Tons of Steel

SAN FRANCISCO, Oct. 12 (*By Air Mail*).—The United States Pipe & Foundry Co. booked 4285 tons of cast iron pipe for Long Beach, Cal. The McClintic-Marshall Co. was awarded 3000 tons of structural steel for a Los Angeles office building. These were the outstanding awards of the week.

Prices on steel products are holding fairly well, weakness in plates being the only marked divergence from levels which have been in effect for some time.

**Pig Iron.**—The pig iron market is without feature. Melters are taking only small tonnages.

*Prices per gross ton at San Francisco:*

*Utah basic	\$25.00 to \$26.00
*Utah fdy., sil.	2.75 to 3.25
**Indian fdy., sil.	2.75 to 3.25
	25.00 to 26.00

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Bars.**—Pending business in reinforcing steel is not large. The week's awards included 175 tons for a court house at Olympia, Wash., 200 tons for a market building in Seattle and 100 tons for an office building in Bellingham, Wash. Bids were opened this week on 363 tons for the approach to the West Spokane Street bridge, Seattle. Bids will be opened on Nov. 19 on 233 tons for the Lake Union bridge near Seattle. Out-of-stock prices in San Francisco remain at 2.30c., base, on carload quantities and at 2.60c. for smaller lots. In the Los Angeles district, quotations are \$2 a ton higher.

**Plates.**—The recent order of the Pacific Gas & Electric Co. for 55,000 tons of fabricated steel pipe, which was awarded to the A. O. Smith Corporation, Milwaukee, as stated in the Oct. 3 issue of THE IRON AGE, was for 40 miles of 12-in., 80 miles of 16-in., 80 miles of 20-in. and 159 miles of 22-in. for a line to run from Kettleman Hills and the San Francisco district. Plate fabricators on the Pacific Coast bid on this business. Another order which went to the A. O. Smith Corporation, as also stated in the Oct. 3 issue, was for 11,000 tons of 20-in. welded pipe for the Southern California Edison Co., which will build a line from Kettleman Hills to Elk Hills. Bids will be opened on Oct. 24 on 1400 tons of 36 to 48-in. welded steel pipe for Everett, Wash. On orders for lots of ordinary size, the usual quotation is 2.35c., c.i.f., but on especially desirable business prices as low as 2.25c. have been made.

**Shapes.**—Structural steel shape lettings were heavier than usual this week and included a number of fair-

#### Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and struc. shapes	3.15c.
Soft steel bars	3.15c.
Small angles, $\frac{3}{8}$ -in. and over	3.15c.
Small angles, under $\frac{3}{8}$ -in.	3.55c.
Small channels and tees, $\frac{3}{4}$ -in. to 2 $\frac{3}{4}$ -in.	3.75c.
Spring steel, $\frac{1}{4}$ -in. and thicker	5.00c.
Black sheets (No. 24)	4.90c.
Blue ann'd sheets (No. 10)	3.80c.
Galv. sheets (No. 24)	5.30c.
Struct. rivets, $\frac{1}{4}$ -in. and larger	5.65c.
Com. wire nails, base per keg	\$3.40
Cement c'd nails, 100 lb. keg	3.40

sized projects. The McClintic-Marshall Co. took 3000 tons for an office building on Broadway, Los Angeles, the Consolidated Steel Corporation; secured 1500 tons for the Los Angeles Stock Exchange Building, and the United States Steel Products Co. booked 450 tons and 250 tons respectively for canning plants at Cagayana, P. I., and Cape Haitien, Tahiti,

for the California Packing Corporation, San Francisco. New inquiries include 1000 tons for an auditorium at Long Beach, 400 tons for a power house at North Bend, Ore., and 276 tons for a bridge at California Park, Cal. Plain material continues firm at 2.35c., c.i.f.

**Cast Iron Pipe.**—Cast iron pipe lettings included 4285 tons of 6 to 12-in. Class 150 pipe for Long Beach, Cal., placed with the United States Pipe & Foundry Co., and 353 tons of 2 to 6-in. Class B pipe for Long Beach Boulevard, Compton, Cal., secured by Gadza & Gogo, Los Angeles. Azusa, Cal., placed 110 tons of 4 and 6-in. Class B pipe for Coney Avenue with J. J. Showalter, Los Angeles. C. E. Printiss, San Jose, took 138 tons of 4-in. Class 150 pipe for Pleasanton, Cal. No new inquiries of importance came up for figures during the week.

## Birmingham

### Pig Iron Inquiries for First Quarter Appear—Ensley Rail Mill Resumes Operations

BIRMINGHAM, Oct. 15. — Inquiries for pig iron for first quarter requirements are beginning to come in from Eastern and Middle West points. Several round tonnages have been sold recently in competitive territories, but they have been for the last quarter requirements. Stocks at furnaces continue to be reduced by the heavy shipments to other territories. District prices remain on the basis of \$14.50 for No. 2 foundry. Prices on iron to outside districts are stronger. The No. 1 furnace of the Republic Iron & Steel Co. was blown in Oct. 14 on foundry iron, making a total of 15 active furnaces in the district. Of this number, seven are on foundry iron, seven on basic and one on recarburizing iron.

*Prices per gross ton, f.o.b. Birmingham dist. furnaces:*

No. 2 fdy., 1.75 to 2.25 sil.	\$14.50
No. 1 fdy., 2.25 to 2.75 sil.	15.00
Basic	14.50

**Finished Steel.**—Demand is undiminished. The rate of new business compares favorably with that of last month. There is no noticeable change in the steady rate of specifying on contracts. Operations were resumed at the Tennessee company's rail mill at Ensley Oct. 14, following receipt of large rail orders, including 62,000 tons for the Louisville & Nashville. Prices on galvanized sheets have been increased \$1 a ton to 3.75c. All other prices are unchanged. Structural steel fabricators have not booked any large orders, but small tonnages have been numerous enough to equal current output. Reinforcing bar manufacturers report better business, mostly in small orders. Eighteen open-hearths remain active, the same as last week.

**Cast Iron Pipe.**—The rate of buying has declined gradually during the past few weeks, and it is now at the

low point of the year. Incoming business is less than the output at the plants, and backlogs are thin. Recent bookings have been made up almost entirely of small lots. A project at Dallas, Tex., estimated to require between 12,000 and 15,000 tons of the larger sizes of pipe, will be up for figures the end of this month. Bids are expected to be asked for in the near future on a project at St. Petersburg, Fla., to require about 1000 tons. These are the only projects of importance known to be pending. Quotations continue at \$37 to \$38 a net ton, Birmingham.

**Coke.**—Spot delivery for foundry coke is a little stronger. Shipments on contracts continue steady. Quotations have been at \$5 a net ton, Birmingham, for almost two years.

**Old Material.**—Demand for steel grades is growing a little stronger as prospects for an increase in the melt become more certain. Iron scrap remains inactive. Prices are unchanged. In steel lines they show strength and in others they are soft.

*Prices per gross ton, deliv'd Birmingham dist. consumers' yards:*

Heavy melting steel	\$13.00 to \$13.50
Scrap steel rails	14.00
Short shoveling turnings	9.00
Cast iron borings	9.00
Stove plate	11.50 to 12.00
Steel axles	21.00
Iron axles	23.00
No. 1 railroad wrought	10.00 to 10.50
Rails for rolling	15.50
No. 1 cast	13.00
Tramcar wheels	12.50
Cast iron carwheels	13.00 to 13.50
Cast iron borings, cnem.	13.50 to 14.00

Murray Iron Works Co., Burlington, Iowa, has appointed the following sales agents: Isaac Hardeman, Charlotte, N. C.; C. Keiser & Co., Dayton, Ohio; William Rudolph, Los Angeles, Cal.; and P. Schmertz, Detroit.

## St. Louis

### First Pig Iron Sale for First Quarter Is Made—Coke Demand Heavier—Scrap Still Weak

ST. LOUIS, Oct. 15.—The first sale of pig iron for delivery during the first quarter of 1930 was made by the St. Louis Gas & Coke Corporation—500 tons of foundry iron to an Illinois wheel manufacturer at present prices. Other inquiries for first quarter are pending. Otherwise, it was an uninteresting week, the local maker selling only an additional 2000 tons for shipment during the remainder of the year, including 500 tons each to an Iowa implement manufacturer and to a local jobbing foundry; 600 tons to a machinery manufacturer and 300 tons to a Missouri jobbing foundry. Sales of Southern iron were light as a result of heavy bookings several weeks ago. The market is firm on both Northern and Southern makes. Shipments of the local maker have averaged 1118 tons daily since Oct. 1.

#### Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25,	
f.o.b. Granite City, Ill.	\$19.50 to \$20.00
Malleable, f.o.b. Granite City	20.00
N'th'n No. 2 fdy., deliv'd St. Louis	22.16
Southern No. 2 fdy., deliv'd	16.92 to 18.92
Northern malleable, deliv'd	22.16
Northern basic, deliv'd	22.16

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

**Finished Iron and Steel.**—With other lines quiet, interest is centered in buying of rails. The St. Louis-San Francisco Railway, as noted, has tentatively placed 30,000 tons for 1930 with the Tennessee Coal, Iron & Railroad Co. It is understood that other railroads are working on their budgets, which will be approved probably about Nov. 1, and the impression is that purchases will be equal to last year's. There is little doing in plates, shapes and bars. The structural trade is dull, and fabricators are in need of orders.

**Coke.**—A steady increase in the demand for coke is noticed. Domestic coke buying exceeds the by-product output in the district, and the increasing melt is helping the sale of foundry grades. Demand for furnace

coke by smelters is heavy, one factor increasing its schedules for October from 1000 tons to 1500 tons.

**Old Material.**—While prices of old material are unchanged, the market still is weak. There was some buying of rolling mill grades during the week and one consumer bought a small tonnage of steel grades. While the movement of scrap iron from the country districts has been cut down as the result of lower prices, railroad lists are heavy, including the following: Chesapeake & Ohio, 8981 tons; Louisville & Nashville, 8000 tons; Atchison, Topeka & Santa Fe, 6235 tons; Southern Pacific, 3450 tons; Texas & Pacific, 3120 tons; Terminal Railway Association (St. Louis), 2350 tons; International-Great Northern, 1500 tons; Chicago & Alton, 1230 tons; Chicago, Rock Island & Pacific, 180 carloads; St. Louis-San Francisco, 71 carloads; Nickel Plate, 41 carloads;

Chicago & Eastern Illinois, 18 carloads; Nashville, Chattanooga & St. Louis, 14 carloads; Pullman Co. (St. Louis), 11 carloads, and Chicago, Milwaukee, St. Paul & Pacific, 9 carloads.

#### Dealers' buying prices per gross ton, f.o.b. St. Louis district:

No. 1 heavy melting or shoveling steel	\$13.50 to \$14.00
No. 2 heavy melting or shoveling steel	13.00 to 13.50
No. 1 locomotive tires	15.50 to 16.00
Miscel. stand-sec. rails including frogs, switches and guards, cut apart	15.50 to 16.00
Railroad springs	17.75 to 18.25
Bundled sheets	10.00 to 10.50
No. 2 railroad wrought	13.50 to 14.00
No. 1 busheling	10.00 to 10.50
Cast iron borings and shoveling turnings	9.50 to 10.00
Iron rails	13.00 to 13.50
Rails for rolling	16.00 to 16.50
Machine shop turnings	7.50 to 8.00
Heavy turnings	10.00 to 10.50
Steel car axles	19.50 to 20.00
Iron car axles	27.50 to 28.00
Wrot. iron bars and trans.	21.50 to 22.00
No. 1 railroad wrought	13.75 to 14.25
Steel rails, less than 3 ft.	18.00 to 18.50
Steel angle bars	15.25 to 15.75
Cast iron carwheels	15.00 to 15.50
No. 1 machinery cast	15.25 to 15.75
Railroad malleable	16.00 to 16.50
No. 1 railroad cast	14.75 to 15.25
Stove plate	12.25 to 12.75
Agricult. malleable	15.25 to 15.75
Relay rails, 60 lb. and under	20.50 to 23.50
Relay rails, 70 lb. and over	26.50 to 29.00

## Boston

### Pig Iron Sales Less Than 5000 Tons—Scrap Market Dull and Prices Decline Further

BOSTON, Oct. 15.—The Universal Winding Co., Providence, R. I., has bought 600 tons of Buffalo pig iron, silicon 2.50 to 3 per cent, and 400 tons of New York State No. 2X iron. A Massachusetts pump manufacturer bought 450 tons of Buffalo iron and some imported iron, while the Mystic Iron Works disposed of one 500-ton lot and another of 300 tons. Otherwise, business was confined to comparatively small tonnages, the aggregate of all sales falling under 5000 tons. There are no inquiries of importance in the market. Foundries that have not purchased fourth quarter iron apparently are in no hurry to do so. While Buffalo furnaces are maintaining \$18 a ton, base furnace, on rail-and-water shipment iron, that price can be bettered on all-rail business, and some furnaces have been disregarding silicon differentials. The Mystic Iron Works sales the past week were at prices ranging from \$20 to \$20.75 a ton, furnace.

#### Foundry iron prices per gross ton deliv'd to most New England points:

†Buffalo, sil. 1.75 to 2.25	\$21.78 to \$22.28
†Buffalo, sil. 2.25 to 2.75	22.28 to 22.78
*Buffalo, sil. 1.75 to 2.25	22.41 to 22.91
*Buffalo, sil. 2.25 to 2.75	22.91 to 23.41
East. Penn., sil. 1.75 to 2.25	22.65 to 23.15
East. Penn., sil. 2.25 to 2.75	23.15 to 23.65
Va., sil. 1.75 to 2.25	25.21
Va., sil. 2.25 to 2.75	25.71
*Ala., sil. 1.75 to 2.25	24.11
*Ala., sil. 2.25 to 2.75	24.61
†Ala., sil. 1.75 to 2.25	20.25
†Ala., sil. 2.25 to 2.75	20.75

Freight rates: \$4.91 all rail from Buffalo, and \$4.28 rail and water; \$3.65 all rail from eastern Pennsylvania; \$5.21 all rail from Virginia; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

\*All rail rate.  
†Rail and water rate.

**Cast Iron Pipe.**—Ayer, Mass., has awarded 125 tons of 6 and 8-in. pipe to the Warren Foundry & Pipe Co., and Foxboro, Mass., 100 tons of 6-in. to the McWane Cast Iron Pipe Co. No other municipal business has been placed openly, but no less than a dozen towns and cities have placed orders for lots of a carload or more. Prices on domestic pipe are well maintained, especially on small dimensions. Quotations made openly are: 4-in., \$44.10 to \$45.10 a ton, delivered common Boston freight rate points; 6 to 12-in., \$40.10 to \$41.10; 16-in. and larger, \$39.10 to \$40.10. Business for next spring delivery is shaping up well. Already the following municipalities have announced plans for work then: North Attleboro, Mass.; North Kingston, R. I.; Westwood, Mass.; Dighton, Mass.; Brownville, Me.; Lenox, Mass.; Sudbury, Mass. The Worcester Gas Light Co., Worcester, Mass., has bought a round tonnage of steel pipe and is in the market for additional tonnages.

**Reinforcing Bars.**—The largest individual sale of billet steel bars the past week was 215 tons for a local bank building. Competition for this tonnage was keen. Mill representatives are quoting 2.66½c. a lb., base, from local stock, but that price has been shaded. The market for rail steel bars continues quiet at 2.26½c. a lb., base, delivered common Boston freight rate points.

**Coke.**—New England by-product coke ovens are devoting most of their attention to domestic fuel, demand

#### Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-fin. rounds, shaftings, screw stock	3.75c.
Black sheets (No. 24)	4.25c.
Galv. sheets (No. 24)	5.10c.
Blue ann'd sheets (No. 10)	4.35c.
Black corrug. sheets (No. 24)	4.30c.
Galv. corrug. sheets	5.15c.
Structural rivets	3.95c.
Boiler rivets	3.95c.
Per Cent Off List	
Tank rivets, ⅝-in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

for which has been large the past week owing to a cold snap. Shipments of foundry coke on contract are steady, and the price remains at \$11 a ton, delivered within a \$3.10 freight rate zone.

**Old Material.**—Prices of old material continue on the downgrade. The weakness is ascribed to the softness of prices in the Pittsburgh territory and to the lack of buying by steel mills rather than to any pressure to sell. In fact, brokers say it is difficult to pick up more than an occasional carload of scrap at going prices and that owners of material in general are prepared to hold on until market conditions improve. Business in heavy melting steel the past week was practically nil. A small tonnage of steel turnings, mixed borings and turnings, steel mill borings, skeleton and forge scrap changed hands. There is virtually no market for T, girder and rerolling rails, shafting, axles, forge flashings and wrought. Consumers of chemical borings are holding up shipments.

*Buying prices per gross ton, f.o.b. Boston rate shipping points:*

No. 1 heavy melting steel	\$10.50 to \$10.75
Scrap T rails	10.50 to 10.75
Scrap girder rails	9.50 to 10.00
No. 1 railroad wrought	10.50 to 11.00
No. 1 yard wrought	9.00 to 9.50
Machine shop turnings	6.50 to 7.00
Cast iron borings (steel works and rolling mill)	6.00 to 6.50
Bundled skeleton, long	9.00 to 9.50
Forge flashings	9.50 to 10.00
Blast furnace borings and turnings	6.00 to 6.25
Forge scrap	8.50 to 9.00
Shafting	13.50 to 14.00
Steel car axles	17.50 to 18.00
Wrought pipe 1 in. in diameter (over 2 ft. long)	9.25 to 9.50
Rails for rolling	12.00 to 12.50
Cast iron borings, chemical	9.50 to 9.75
<i>Prices per gross ton deliv'd consumers' yards:</i>	
Textile cast	\$14.00 to \$14.50
No. 1 machinery cast	15.00 to 15.25
No. 2 machinery cast	13.00 to 13.25
Stove plate	11.00 to 11.50
Railroad malleable	18.50 to 19.00

#### Warehouse Prices, f.o.b. Boston

Base per Lb.	
Plates	3.365c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Soft steel bars, small shapes	3.265c.
Flat, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway squares and flats	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tie steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex.	*3.55c. to 5.55c.
Squares and flats	*4.05c. to 7.05c.
Toe calk steel	6.00c.
Rivets, structural or boiler	4.50c.
Per Cent Off List	
Machine bolts	.50 and 5
Carriage bolts	.50 and 5
Lag screws	.50 and 5
Hot-pressed nuts	.50 and 5
Cold-punched nuts	.50 and 5
Stove bolts	.70 and 10

\*Including quantity differentials.

## Cincinnati

### Pig Iron Melters Slow in Covering Future Needs—Southern Prices Firmer—Scrap Market Weak

CINCINNATI, Oct. 15.—District consumers of pig iron continue to display reluctance toward entering the market for substantial tonnages, although reports indicate a fairly heavy melt and a sustained demand for castings. As a result, sales of pig iron last week declined sharply, furnaces reporting a total of approximately 3550 tons, of which 1550 was Southern foundry iron and the remainder Northern iron. While the Southern iron sold last week was in small quantities, generally carload lots, and no real test of prices resulted, furnaces maintained quotations at \$14 to \$14.50, base Birmingham. With surplus stocks of Southern furnaces substantially reduced, the market appears to be strengthening, and prices under \$14, even on good tonnages, are less likely. Northern furnaces are adhering to present schedules, and current sales all figure at about \$18.50, base, Lake furnace. The largest order of the week was from a central Indiana consumer, which took 400 tons of Northern Foundry iron. The Wickham Piano Plate Co., Springfield, Ohio, is asking for quotations, but no amount of iron is specified. The Favorite Stove Co., Piqua, Ohio, is inquiring for 400 tons of iron with 2.75 to 3.25 per cent of silicon.

*Prices per gross ton, deliv'd Cincinnati:*

So. Ohio fdy., sil. 1.75 to 2.25	\$19.89 to \$20.39
Ala. fdy., sil. 1.75 to 2.25	17.19 to 18.19
Ala. fdy., sil. 2.25 to 2.75	17.69 to 18.69
Tenn. fdy., sil. 1.75 to 2.25	17.19 to 18.19
S'th'n Ohio silvery, 8 per cent	26.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

**Finished Material.**—Although new business of district sheet mills last week was approximately 25 per cent below capacity production, backlogs were increased slightly because a good portion of the new specifications was for forward delivery. Accordingly, the anticipated improvement in operating schedules did not materialize, but production at about 75 to 80 per cent is well sustained. Operators continue sanguine that schedules will be increased to full capacity by the first of next month, basing their opinions on the present volume of inquiry and the moderate improvement in the automotive demand. Seven to 10 days is about the average time for shipment of stock material, while three to five weeks is the general promise on special sheets. While prospects are still fairly good in the structural market, the current volume of business of district steel fabricators is small and competition is keen.

**Coke.**—Domestic coke is moving steadily, district oven representatives reporting about 3000 tons in miscellaneous lots as last week's total. By-product foundry coke is going forward at a good rate on contract, but

#### Warehouse Prices, f.o.b. Cincinnati

Base per Lb.	
Plates and struc. shapes	3.40c.
Bars, soft steel or iron	3.30c.
New billet reinfoc. bars	3.15c.
Rail steel reinfoc. bars	3.00c.
Hoops	4.05c.
Bands	3.50c.
Cold-fin. rounds and hex.	3.85c.
Squares	4.35c.
Black sheets (No. 24)	4.05c.
Galvanized sheets (No. 24)	4.90c.
Blue ann'l'd sheets (No. 10)	3.45c.
Structural rivets	3.85c.
Small rivets	.65 per cent off list
No. 9 ann'l'd wire, per 100 lb.	\$3.00
Com. wire nails, base per keg	2.85
Cement c'd nails, base 100 lb. keg	2.85
Chain, per 100 lb.	8.75
Net per 100 Ft.	
Lap-weld steel boiler tubes, 2-in.	\$16.00
4-in.	33.00
Seamless steel boiler tubes, 2-in.	17.00
4-in.	34.00

new business is in small quantities.

**Old Material.**—Although the supply of good scrap is not large, the situation is a trifle easier than a week ago. The continued pressure on prices by the mills has given the market a tone of softness, and, accordingly, dealers are bidding 25c. a ton less on heavy melting steel and No. 2 wrought than a week ago. Demand for the cast iron grades has improved and, since these grades did not advance with the steel grades, prices are unchanged.

*Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:*

Heavy melting steel	\$13.25 to \$13.50
Scrap rails for melting	14.25 to 14.75
Loose sheet clippings	8.75 to 9.25
Bundled sheets	11.00 to 11.50
Cast iron borings	9.00 to 9.25
Machine shop turnings	8.25 to 8.50
No. 1 busheling	10.50 to 11.00
No. 2 busheling	7.00 to 7.50
Rails for rolling	14.50 to 15.00
No. 1 locomotive tires	14.25 to 14.75
No. 2 railroad wrought	13.25 to 13.50
Short rails	18.50 to 19.00
Cast iron carwheels	12.75 to 13.25
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	15.25 to 15.75
Burnt cast	10.25 to 10.75
Stove plate	10.25 to 10.75
Brake shoes	10.25 to 10.75
Agricultural malleable	14.25 to 14.75
Railroad malleable	15.25 to 15.75

### German Cable Exports Gain

HAMBURG, GERMANY, Sept. 30.—Exports of cable continue to increase. The total in the first eight months of this year was 38,100 tons, compared with 49,000 tons in all of 1928, 42,000 tons in all 1927 and 31,800 tons in all of 1926. Shipments of cable to South American markets registered a considerable gain in the first seven months of this year, Argentina receiving 8828 tons compared with 5139 tons in the same period of 1928. The total value of cable exported in the first eight months of this year was about 40,000,000 m. (\$9,520,000).

The Central Iron & Steel Co., Harrisburg, Pa., has moved its Boston office from 131 State Street to the Statler Building, Park Square. G. T. Armstrong is district manager.

# Buffalo

## Ford Motor Co. Buys Pig Iron—Mill Operations Show No Gain—Large Purchase of Steel Scrap

**BUFFALO, Oct. 15.**—The Ford Motor Co. has placed a tonnage of high silicon malleable pig iron with a Buffalo furnace for water shipment, and is reported to be in the market for an additional tonnage of the same grade of iron, which will probably be placed with another maker. The exact amount of the iron placed is not known, but it is reported to be around 5000 tons. The price was not disclosed. Inquiry for pig iron has fallen off, with a total of 3000 tons reported. Included in this is one lot of 1000 tons of foundry iron for New England shipment. The Worthington Pump & Machinery Corporation, which bought 1600 tons last week, is understood to have placed part of this iron with a Buffalo furnace.

**Prices per gross ton, f.o.b. furnace:**  
No. 2 fdy., sil. 1.75 to 2.25.....\$19.50  
No. 2X fdy., sil. 2.25 to 2.75..... 20.00  
No. 1 fdy., sil. 2.75 to 3.25..... 21.00  
Malleable, sil. up to 2.25..... 20.00  
Basic ..... 18.50  
Lake Superior charcoal..... 27.28

**Finished Iron and Steel.**—Operation of Buffalo mills shows no increase over the past week, with 70 per cent the average. A Buffalo fabricator took 170 tons of structural steel for a new job at the Elmira Reformatory, and an inquiry is out for 200 tons of structural for a school in the town of Amherst. The reinforcing bars for the new Attica prison, totaling 2400 tons, are understood to have been placed with a Chicago company.

**Old Material.**—A Buffalo steel plant has bought a large tonnage of No. 1 and No. 2 heavy melting steel, paying \$15.50 for the No. 1 steel and \$14 for No. 2. A sale of considerable tonnage of stove plate is noted at \$12.75. It is probable that about 5000 tons was involved. There is a fair demand for malleable scrap. One of the railroads recently closing a list obtained \$20, Buffalo, for this scrap, though all of it went out of town. A sale of 1000 tons of cast iron wheels at \$13.50 is noted, and a new borings order is out at \$12. Dealers are expecting that another tonnage of No. 1 machinery cast and No. 1 heavy melting steel will be purchased within a week. Stocks in dealers' yards are heavy, and this also applies to most of the consumers. The largest

consumer in the district reports that its stock of scrap is the heaviest of any time in months, receiving as high as four boat loads of material a week from Detroit. Its total of boat shipments during the season runs well over 200,000 tons.

**Prices per gross ton, f.o.b. Buffalo consumers' plants:**

Basic Open-Hearth Grades:	
No. 1 heavy melting steel.....	\$15.50 to \$16.50
No. 2 heavy melting steel.....	14.00 to 14.50
Scrap rails.....	16.00 to 16.50
Hydraulic comp. sheets.....	14.25 to 14.50
Hand bundled sheets.....	11.60 to 11.50
Drop forge flashings.....	14.25 to 14.50
No. 1 busheling.....	15.75 to 16.00
Hvy. steel axle turnings.....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
No. 1 railroad wrought.....	13.00 to 13.50
Acid Open-Hearth Grades:	
Knuckles and couplers.....	18.00 to 18.50
Coil and leaf springs.....	18.00 to 18.50
Roller steel wheels.....	18.00 to 18.50
Low phos. billet and bloom ends.....	19.00 to 19.50
Electric Furnace Grades:	
Short shov. steel turnings.....	12.50 to 13.00
Blast Furnace Grades:	
Short mixed borings and turnings.....	11.50 to 12.25
Cast iron borings.....	11.50 to 12.00
No. 2 busheling.....	10.00 to 10.50
Rolling Mill Grades:	
Steel car axles.....	18.75 to 19.25
Iron axles.....	21.00 to 22.00
Cupola Grades:	
No. 1 machinery cast.....	15.50 to 16.00
Stove plate.....	12.50 to 12.75
Locomotive grate bars.....	12.50 to 13.00
Steel rails, 3 ft. and under.....	19.50 to 19.75
Cast iron carwheels.....	13.50
Malleable Grades:	
Industrial.....	18.00 to 18.50
Railroad.....	18.00 to 18.50
Agricultural.....	18.00 to 18.50
Special Grades:	
Chemical borings.....	12.50 to 13.50

local quotation to \$23.60 for No. 1 iron. United States producers, however, continue to supply the Canadian agricultural implement industry, as iron for these plants enters the country free of duty. A falling off in demand for pig iron has occurred. Curtailment is directly due to the decline in forward delivery contracts. Most of the melters who place quarterly contracts are now covered to the end of the year. Spot demand, however, is well sustained and showing improvement in some localities. The Algoma Steel Corporation, Sault Ste. Marie, Ont., has blown out one of its blast furnaces and now has two stacks operating, making a total of eight active furnaces of a total of 11 in Canada.

**Prices per gross ton:**  
**Delivered Toronto**  
No. 1 fdy., sil. 2.25 to 2.75.....\$23.60  
No. 2 fdy., sil. 1.75 to 2.25..... 23.10  
Malleable..... 23.60

**Delivered Montreal**  
No. 1 fdy., sil. 2.25 to 2.75.....\$25.00  
No. 2 fdy., sil. 1.75 to 2.25..... 24.50  
Malleable..... 25.00  
Basic..... 23.50

**Imported Iron, Montreal Warehouse**  
Summerlee.....\$33.50  
Carron..... 33.00

**Structural Steel.**—Demand has declined during the past two weeks, but fabricators are still running full time and report large backlogs.

**Old Material.**—Business failed to show improvement during the week, although sales are holding at a level higher than a year ago. Prices are firm.

*Dealers' buying prices:*

<i>Per Gross Ton</i>		
	Toronto	Montreal
Heavy melting steel.....	\$10.00	\$8.50
Rails, scrap.....	11.00	9.00
No. 1 wrought.....	10.00	12.00
Machine shop turnings.....	7.50	5.00
Boiler plate.....	7.50	6.00
Heavy axle turnings.....	8.00	7.50
Cast borings.....	7.50	5.00
Steel borings.....	7.50	6.50
Wrought pipe.....	6.00	6.00
Steel axles.....	15.00	20.00
Axles, wrought iron.....	17.00	22.00
No. 1 machinery cast.....	.....	17.00
Stove plate.....	.....	13.00
Standard carwheels.....	.....	16.00
Malleable.....	.....	13.00

**Per Net Ton**

No. 1 mach'ry cast.....	\$16.00	.....
Stove plate.....	12.00	.....
Standard carwheels.....	15.00	.....
Malleable scrap.....	14.00	.....

The management of the American Society for Steel Treating at Cleveland announces that the dates for the semi-annual meeting of the national society will be held Feb. 7 and 8, at the Hotel Pennsylvania, New York.

# Canada

## Pig Iron Prices Are Reduced \$1 a Ton

**TORONTO, ONT. Oct. 15.**—A reduction of \$1 a ton in Canadian pig iron prices, effective in both Toronto and Montreal markets, has been announced. This cut was made in an effort to shut out Buffalo competition in the Toronto market and Port Henry competition in the Montreal district. With Buffalo iron quoted at \$18, the price laid down to consumers in Toronto, duty and freight paid, is approximately \$24 a ton, whereas the drop in the Canadian price brings the

### Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and struc. shapes.....	3.40c.
Soft steel bars.....	3.30c.
Reinforcing bars.....	2.95c.
Cold-fin. flats, sq. and hex.....	4.45c.
Rounds.....	3.95c.
Cold-rolled strip steel.....	5.85c.
Black sheets (No. 24).....	4.20c.
Galv. sheets (No. 24).....	4.85c.
Blue ann'l'd sheets (No. 10).....	3.50c.
Com. wire nails, base per keg.....	\$3.60
Black wire, base per 100 lb.....	3.75

### Shipments of Equipment and Enameled Ware

	Sept., 1929	Aug., 1929	Sept., 1928
Electric industrial trucks and tractors.....	161	154	118
Electric industrial trucks and tractors, nine months.....	1,586 <sup>b</sup>		1,047
Mining and industrial electric locomotives.....	\$1,516,397 <sup>c</sup>	\$1,121,162 <sup>c</sup>	
	Aug., 1929	July, 1929	Aug., 1928
Sheet-metal ware, enameled,* dozens.....	385,162	290,532	358,811
Sheet-metal ware, enameled, value.....	\$1,371,354	\$1,097,956	\$1,354,316

\* United States Department of Commerce.

<sup>b</sup> Highest on record.

<sup>c</sup> Shipments represent quarters ended Sept. 30, and June 30.

## Fabricated Structural Steel

### Thirty Per Cent of Lettings, Totaling 23,000 Tons, Are for Pacific Coast Work

APPROXIMATELY 30 per cent of the structural steel lettings in the past week, totaling 23,000 tons, were for construction work on the Pacific Coast. The tonnage in the aggregate was about evenly divided between industrial structures and buildings for other purposes. Thirty-six hundred tons for a power house at Powerton, Ill., and 3000 tons for an office building at Los Angeles, Cal., were the largest awards.

Inquiries, at 49,000 tons, were less than half of those of the previous week. Almost 20,000 tons of fresh inquiries came out in the New York district, where business in prospect is unusually heavy. Among the new jobs on which bids are being taken are a New York office building, requiring 9400 tons, a viaduct and suburban stations at Philadelphia for the Pennsylvania Railroad, 14,000 tons, and a New York subway section, 6800 tons. Awards follow:

SPRINGFIELD, MASS., 100 tons, warehouse for Gilbert & Barker Mfg. Co., to Palmer Steel Co.

HOLYOKE, MASS., 100 tons, paper plant, to Haarmann Steel Co.

BOSTON & ALBANY RAILROAD, 500 tons, roundhouse at Springfield, Mass., to Haarmann Steel Co.

STATE OF NEW YORK, 125 tons, highway bridges, to American Bridge Co.

NEW YORK, 500 tons, Roosevelt Memorial at Seventy-seventh Street and Central Park West, to Easton Structural Steel Co.

NEW YORK, 2300 tons, apartment building at Park Avenue and Seventy-third Street, to A. E. Norton, Inc.

NEW YORK, 1200 tons, apartment building on Seventy-second Street, to Paterson Bridge Co.

BOUND BROOK, N. J., 435 tons, building for Calco Chemical Co., to Levering & Garrigues Co.

PHILADELPHIA, 350 tons, alteration work for Corn Exchange National Bank & Trust Co., to McClintic-Marshall Co.

PHILADELPHIA, 160 tons, bridge for Pennsylvania Railroad, to McClintic-Marshall Co.

PENNSYLVANIA RAILROAD, 700 tons, work in West Philadelphia, to McClintic-Marshall Co.

CHESAPEAKE & OHIO RAILROAD, 700 tons, bridge at Ceredo, W. Va., to American Bridge Co.

AMBRIDGE, PA., 150 tons, electric welding building for National Metal Molding Co., to Jones & Laughlin Steel Corporation.

ROME, N. Y., 200 tons, New York Central grade crossing improvement, to McClintic-Marshall Co.

ELMIRA, N. Y., 170 tons, shop for Elmira Reformatory, to Kellogg Structural Steel Co.

BUFFALO, 800 tons, Buffalo *Courier-Express* building, to McClintic-Marshall Co.

CLEVELAND, 270 tons, Lakewood Land & Securities Co. Lakewood store for Bailey Co., to Kilroy Structural Steel Co.

RIVER FOREST, ILL., 300 tons of steel and 100 tons of castings for Bowman Dairy Co., to A. F. Anderson, Chicago.

POWERTON, ILL., 3600 tons, power house, to Mississippi Valley Structural Steel Co.

JANESVILLE, WIS., 700 tons, Monterey overhead bridge, to Lakeside Bridge & Steel Co.

MILWAUKEE, 130 tons, Oklahoma Avenue bridge, to Worden-Allen Co.

MADISON, WIS., 650 tons, University of Wisconsin field house, to Mississippi Valley Structural Steel Co.

TWO RIVERS, WIS., 200 tons, Hamilton Mfg. Co., to Vulcan Mfg. Co., Fond du Lac, Wis.

STEVENS POINT, WIS., 200 tons, Whiting Plover paper mills, to Wausau Iron Works.

GREAT NORTHERN, 400 tons, tender tanks, to Williamson Brothers Boiler Works.

ILLINOIS CENTRAL, 120 tons, bridge, to American Bridge Co.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC, 275 tons, bridges, to American Bridge Co.

UNION PACIFIC, 425 tons, bridges, to an unnamed bidder.

DENVER, 1200 tons, viaduct, to American Bridge Co.; previously reported to an unnamed bidder.

OAKLAND, CAL., 150 tons, apartment building on Lenox Avenue, to Herrick Iron Works.

OAKLAND, 140 tons, hotel, San Pablo and Twenty-fourth Streets, to Herrick Iron Works.

OAKLAND, 120 tons, factory for Wills Motor Co., to Pacific Coast Engineering Co.

OAKLAND, 240 tons, transit shed No. 2 for Port Commission, to Pacific Coast Engineering Co.

SAN FRANCISCO, 450 tons, canning plant at Cagayana, Philippine Islands, for California Packing Corporation, to United States Steel Products Co.

SAN FRANCISCO, 250 tons, canning plant for California Packing Corporation, Cape Haitian, Tahiti, to United States Steel Products Co.

LOS ANGELES, 3000 tons, office building, Ninth Street and Broadway, to McClintic-Marshall Co.

LOS ANGELES, 1500 tons, Los Angeles Stock Exchange Building, to Consolidated Steel Corporation.

TACOMA, WASH., 150 tons, hangar, to Star Iron Works; previously reported to an unnamed bidder.

TACOMA, 150 tons, smelter addition, to Star Iron Works.

MARSHFIELD, ORE., 400 tons, power house, to an unnamed bidder.

#### Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK, 9400 tons, Salmon Building at Fifth Avenue and Forty-second Street.

NEW YORK, 6800 tons, section 7, route 108, of subway in Queens; bids due Oct. 25.

NEW YORK, 2300 tons, apartment building at 895 Park Avenue.

NEW YORK, 1000 tons, apartment building at 992 Park Avenue.

BROOKLYN, 4000 tons, Kings County Hospital; new bids being taken.

PENNSYLVANIA RAILROAD, 14,000 tons, viaduct and suburban stations at Philadelphia.

PASSAIC, N. J., 1000 tons, building for United States Rubber Co.

PASSAIC, N. J., 250 tons, Young Women's Christian Association Building.

PHILADELPHIA, 1500 tons, junior high school.

FORT WAYNE, IND., 800 tons, theater.

LANSING, MICH., 1700 tons, office building for R. E. Olds Co.

CHICAGO, 900 tons, Swedish Engineers' Society Building.

CHICAGO, 500 tons, 124th Field Artillery Armory; Great Lakes Construction Co., general contractor.

CHICAGO, 950 tons, Wieboldt department store on Sixty-third Street.

MILWAUKEE, 4000 tons, Northwestern Mutual Life Building; plans out.

OMAHA, NEB., 2000 tons, addition to Union Pacific Station.

EVERETT, WASH., 1400 tons plates for pipe line; bids Oct. 24.

NORTH BEND, ORE., 400 tons, power house; bids being taken.

LONG BEACH, CAL., 970 tons, municipal auditorium; bids being taken.

PHOENIX, ARIZ., 171 tons, bridges on Holbrook-Lupton highway; bids Nov. 4.

SACRAMENTO, CAL., 276 tons, overhead crossing at California Park; bids Nov. 6.

### Fire Protection and Prevention

(Concluded from page 1042)

stalled; but if this is not advisable the alarm may be sounded by ringing a bell or by word of mouth. Alarms for fire-drills should be sounded only by the fire marshal. Upon the sounding of an alarm in case of actual fire the fire marshal assumes control of the situation and directs the fighting by orders to the squad captains. Upon arrival of the city fire department that control is relinquished and the authorities take full charge.

#### Instruction of Employees Is Essential

We are particular about educating employees along the lines of (accident) safety and conducting safety campaigns, both to prevent accidents and to treat them when they occur. An educational and instructive campaign to prevent fires and to plan what to do when they occur is no less important. Such education should be along the lines of fire prevention, fire fighting and obeying fire regulations. The average workman needs such instruction just as much as a child. Employees like to know that there is adequate fire protection and that they can leave the building with safety in case of a fire.

A campaign to prevent fires is necessary as a prerequisite to saving property and human life. Losses from this cause frequently go beyond the individual plant suffering from fire loss, because often one or more other establishments depend upon goods produced by the plant to maintain production. On the other hand, one or more establishments may depend largely upon goods consumed by the plant to keep them running at full capacity. Industry must insist on fire protection, to protect itself from destruction and the waste of material wealth.

# Non-Ferrous Metal Markets

## Tin at Lowest Level Since 1924—Other Metals Quiet and Firm

NEW YORK, Oct. 15.

**Copper.**—Despite September copper statistics favorable to sellers and made public on Oct. 11, demand continues very light. The statistics show a decrease of nearly 10,000 tons in refined copper stocks and an increase of about 11,000 tons in blister stocks. Thus, the net increase of copper above ground was only about 1000 tons. The drop in stocks was influenced by a two weeks' strike at a New Jersey refinery. September shipments increased less than 2000 tons. It was thought that buying would increase after the announcement of favorable statistics, but there has been very little change in the week. The larger part of the week's selling was to foreign consumers, buying by domestic melters continuing in moderate volume. Prices are unchanged, with electrolytic copper quoted at 18c., delivered in the Connecticut Valley, and Lake copper at 18.12½c., delivered. Copper Exporters, Inc., continues to quote 18.30c., c.i.f. usual European ports.

**Tin.**—At 42.25c. yesterday and today, spot Straits tin, New York, sold at the lowest price since June 11, 1924, when the quotation was 42.12½c. Sales for the week ended Saturday, Oct. 12, were about 1000 tons, but yesterday the market turned active because of a big break in London prices and 500 tons changed hands, with consumers the principal buyers. In London, sales included deliveries through May. Today demand let up and the market was very quiet. When tin in London declined to £200 a ton recently, the group became buyers but yesterday, when the market turned weak, they did not support it and quotations dropped to the lowest point in several years. Today the London market turned upward, due to buying by a large London house credited as acting for the group. Prices today were £191 2s. 6d. for spot standard, £195 15s. for future standard and £195 12s. 6d. for spot Straits, all considerably lower than a week ago. The Singapore market today was £197 5s. London warehouse stocks, at 12,712 tons, were again reported as the largest in history.

**Lead.**—Conditions have changed little from those ruling a week ago. Buying for November continues with some purchases for October delivery, but the total volume is not large.

### THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Oct. 15	Oct. 14	Oct. 11	Oct. 10	Oct. 9
Lake copper, New York.....	18.12½	18.12½	18.12½	18.12½	18.12½
Electrolytic copper, N. Y.*.....	17.75	17.75	17.75	17.75	17.75
Straits tin, spot, N. Y. ....	42.25	42.25	42.87½	43.25	43.37½
Zinc, East St. Louis.....	6.80	6.80	6.80	6.80	6.80
Zinc, New York.....	7.15	7.15	7.15	7.15	7.15
Lead, St. Louis.....	6.70	6.70	6.70	6.70	6.70
Lead, New York.....	6.90	6.90	6.90	6.90	6.90

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

### Rolled Products

#### List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

#### Sheets—

High brass.....	23.25c.
Copper, hot rolled.....	26.75c.
Zinc.....	10.25c.
Lead (full sheets).....	11.00c. to 11.25c.

#### Seamless Tubes—

High brass.....	28.25c.
Copper.....	29.25c.

#### Rods—

High brass.....	21.25c.
Naval brass.....	24.00c.

#### Wire—

Copper.....	19.87½c.
High brass.....	23.75c.
Copper in Rolls.....	26.75c.
Brazed Brass Tubing.....	30.87½c.

### Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide.....	33.00c.
Tubes, base.....	42.00c.
Machine rods.....	34.00c.

### Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass.....	23.25c.
Copper, hot rolled.....	27.75c.
Copper, cold rolled, 14 oz. and heavier.....	30.00c.
Zinc.....	10.75c.
Lead, wide.....	11.35c.

#### Seamless Tubes—

Brass.....	28.25c.
Copper.....	29.25c.
Brass Rods.....	21.25c.
Brazed Brass Tubes.....	31.00c.

### New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass.....	21.12½c. to 22.12½c.
Copper, hot rolled, base sizes.....	27.75c. to 28.75c.
Copper, cold rolled, 14 oz. and heavier, base sizes.....	30.00c. to 31.00c.
Seamless Tubes—	
Brass.....	26.00c. to 27.00c.
Copper.....	29.12½c. to 30.12½c.
Brazed Brass Tubes.....	29.12½c. to 30.12½c.
Brass Rods.....	18.87½c. to 19.87½c.

### New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9).....	10.75c. to 11.25c.
Zinc sheets, open.....	11.50c. to 12.00c.

### Metals from New York Warehouse

Delivered Prices, Per Lb.

Tin, Straits pig.....	45.00c. to 46.00c.
Tin, bar.....	47.00c. to 48.00c.
Copper, Lake.....	19.50c.
Copper, electrolytic.....	19.25c.
Copper, casting.....	19.00c.
Zinc, slab.....	7.75c. to 8.25c.
Lead, American pig.....	7.62½c. to 8.12½c.
Lead, bar.....	9.62½c. to 10.12½c.
Antimony, Asiatic.....	10.50c. to 11.00c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure).....	25.00c. to 26.00c.
Alum. ingots, No. 12 alloy.....	24.00c. to 25.00c.
Babbitt metal, commercial grade.....	25.00c. to 26.00c.
Solder, ½ and ⅓.....	29.50c. to 30.00c.

### Metals from Cleveland Warehouse

Delivered Prices, Per Lb.

Tin, Straits pig.....	48.00c.
Tin, bar.....	50.00c.
Copper, Lake.....	19.50c.
Copper, electrolytic.....	19.25c.
Copper, casting.....	18.75c.
Zinc, slab.....	8.00c. to 8.25c.
Lead, American pig.....	7.55c. to 7.75c.
Lead, bar.....	9.75c.
Antimony, Asiatic.....	16.00c.
Babbitt metal, medium grade.....	18.75c.
Babbitt metal, high grade.....	52.00c.
Solder, ½ and ⅓.....	30.25c.

### Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible.....	15.00c.	16.50c.
Copper, hvy. and wire.....	14.75c.	16.25c.
Copper, light and bottoms.....	12.75c.	14.00c.
Brass, heavy.....	8.25c.	9.25c.
Brass, light.....	7.50c.	8.50c.
Hvy. machine composition.....	12.00c.	13.00c.
No. 1 yel. brass turnings.....	9.75c.	10.50c.
No. 1 red brass or compos. turnings.....	11.25c.	12.25c.
Lead, heavy.....	5.50c.	6.00c.
Lead, tea.....	4.25c.	5.25c.
Zinc.....	3.50c.	4.00c.
Sheet aluminum.....	13.75c.	16.00c.
Cast aluminum.....	12.00c.	14.00c.

Prices are unchanged, with the leading producer at 6.70c., St. Louis, and the American Smelting & Refining Co. at 6.90c., New York, as its contract price.

**Zinc.**—Conditions are somewhat mixed as to prices. Leading producers still maintain 6.80c., East St. Louis, as their quotation for prime Western, and it is known that substantial sales have been made during the week at that level. There have also been some sales of small amounts at 6.75c. It is known that stocks in consumers' hands are very low in some cases. Should these be replenished, it is contended that there will by no means be enough metal under 6.80c. to supply the demand, and this demand must materialize before long. It was expected to appear before this. Mining of ore has been resumed in the Tri-State district, and production last week was estimated at about 13,000 tons, which is close to the output previous to the curtailment. Shipments were more than 12,100 tons and sales about 10,700 tons, with the surplus estimated at 41,612 tons, compared with about 47,000 tons a week ago. The quotation is still \$44, Joplin.

**Antimony.**—Because China is again facing a revolution with the possibility of a demoralization of its trade with other countries, a large importer in New York has sent out a circular to the effect that, while there is no indication of an early shortage, con-

ditions in China could lead to an advance in price. New York dealers are offering Chinese antimony at a level somewhat lower than it can be purchased in China. A good buying for November-December arrivals as an insurance against contingencies in China is not unlikely. Quotations today are 8.50c., New York, duty paid, for all positions.

**Nickel.**—Wholesale lots of ingot nickel are quoted at 35c. per lb., with shot nickel at 36c. and electrolytic nickel in cathodes at 35c.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted at the published price of 23.90c. per lb., delivered.

#### Non-Ferrous Metals at Chicago

CHICAGO, Oct. 15.—Prices generally are firm with the exception of tin and antimony, which are weak under the influence of foreign markets. Sales are in fair volume. The old metal market is quiet.

*Prices per lb., in carload lots:* Lake copper, 18.50c.; tin, 43.25c.; lead, 6.80c.; zinc, 6.90c.; in less-than-carload lots, antimony, 9.37½c. On old metals we quote copper wire, crucible shapes and copper clips, 14c.; copper, bottoms, 11.50c.; red brass, 11.50c.; yellow brass, 8c.; lead pipe, 4.50c.; zinc, 3.25c.; pewter, No. 1, 24.50c.; tin foil, 26c.; block tin, 36c.; aluminum, 12.87½c.; all being dealers' prices for less-than-carload lots.

Santa Fe has purchased 1500 box cars, 500 refrigerator cars, 10 chair cars, 10 smoking and five dining cars, two observation cars, 19 mail and baggage, two gas-electric and three mail and smoking cars from Pullman Car & Mfg. Corporation, 200 gondola cars from Standard Steel Car Co., 500 box and 500 automobile cars from Pressed Steel Car Co., 300 stock cars from Pennsylvania Car Co., 1000 box cars from General American Car Corporation, 300 gondola, 500 box, 200 ballast, 104 caboose and 150 flat cars from American Car & Foundry Co. One hundred tank cars with cast steel underframes are still to be placed.

St. Louis-San Francisco is in the market for 2500 box, 800 gondola, 500 automobile, 10 baggage and five baggage and mail cars.

Great Northern will build 30 locomotives, 1000 box and 300 ore cars in its own shops, and will buy 1000 gondola cars.

Baltimore & Ohio has ordered 1500 box car bodies from Standard Steel Car Co. and 1000 steel gondola cars from Bethlehem Steel Corporation.

New York, New Haven & Hartford is inquiring for 12 steel underframes.

St. Louis-San Francisco has ordered 10 box car underframes from American Car & Foundry Co.

Columbian Gasoline Corporation has ordered 25 tank cars from General American Tank Car Corporation.

Republic Iron & Steel Co. has ordered 43 gondola car bodies from Pressed Steel Car Co.

Argentine State Railways are inquiring in the American market for 1102 box cars, 500 gondola cars, 398 platform cars and 60 caboose cars.

Burlington is asking for prices on 12 4-6-4 and eight 4-8-4 type locomotives.

Seaboard Air Line will buy four Mikado, five switch and six Decapod type locomotives.

## Reinforcing Steel

With Awards of 3000 Tons,  
Week Has Been Quiet

**R**EINFORCING steel awards in the past week totaled only 3000 tons. With the exception of 600 tons for a sewage disposal plant at Chicago, lettings ranged from 100 to 300 tons each. Awards follow:

STONECOE, N. Y., 900 tons, building for New York Traprock Co., to Concrete Steel Co.  
ALLANTOWN, PA., 100 tons, bridge at Wyoming Street, to Taylor-Davis Co.  
BOSTON, 215 tons, banking building, to Joseph T. Ryerson & Son, Inc.  
NORWALK, CONN., 150 tons, sewage disposal plant, to Concrete Steel Co.  
GLENCOE, N. Y., 100 tons, grade school, to Kalman Steel Co.  
PASSAIC, N. J., 100 tons, addition to United States Rubber Co.'s plant, to Concrete Steel Co.  
WANAEUE, N. J., 150 tons, reservoir, to Concrete Steel Co.  
PALISADES PARK, N. J., 200 tons, bridge, to unnamed fabricator.  
ATTICA, N. Y., 2400 tons, new State prison, to American System Co., previously reported placed with the Bourne-Fuller Co.  
BUFFALO, 240 tons, *Courier-Express* building, to Joseph T. Ryerson & Son, Inc.  
SOUTH BEND, IND., 100 tons concrete mesh, to a general contractor by Concrete Engineering Co.  
CHICAGO, 600 tons, Northwest sewage treating plant, to Concrete Steel Co.  
CHICAGO, 125 tons, building for the Kroeger Grocery Co., to an unnamed bidder.  
CHICAGO, 285 tons, Parker Junior High School, to Calumet Steel Co.  
CLAYTON, MO., 125 tons, St. Louis County hospital, to Missouri Rolling Mills Corporation.  
SEATTLE, 200 tons, market building on Third Street, to Pacific Coast Steel Co.  
BELLINGHAM, WASH., 100 tons, office building for Puget Sound Light & Power Co., to Pacific Coast Steel Co.  
OLYMPIA, WASH., 175 tons, Thurston County Court House, to Pacific Coast Steel Co.

#### Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

HARRISBURG, PA., 140 tons, freight building for Pennsylvania Railroad.  
PHILADELPHIA, 500 tons, sewer and bulk head on Springgarden Street.  
OLYMPIA, WASH., 233 tons, Lake Union bridge; bids Nov. 19.

## Non-Ferrous Ingot Metal Unfilled Orders

CHICAGO, Oct. 15.—On Oct. 1, unfilled orders for brass and bronze ingots and billets on the books of the members of the Non-Ferrous Ingot Metal Institute amounted to a total of 16,246 net tons, according to an announcement of the Institute issued today. On Sept. 1, the unfilled orders were 15,065 tons.

## Railroad Equipment

Santa Fe Purchases 5805 Cars,  
Southern 3500, Baltimore  
& Ohio 1000

**W**ITH orders having been placed for 11,579 cars and with inquiries having appeared for 5860 cars, the past week was one of the most active of the year in the railroad equipment market. The Santa Fe and the Southern bought 5805 and 3500 cars respectively, the purchase of the latter having been in addition to the 1500 cars contracted for the previous week. The Great Northern will build 1300 cars in its own shops. The Baltimore & Ohio has ordered 1000 cars and 1500 car bodies.

Outstanding among inquiries are 3815 cars for the St. Louis-San Francisco and 2060 for the Argentine State Railways. The Burlington is asking for bids on 20 locomotives and the Seaboard Air Line on 15. The Chicago, Indianapolis & Louisville is expected to purchase 10 locomotives. Details of the week's business follow:

Interstate Commerce Commission has granted authority to Chicago, Indianapolis & Louisville Railroad to issue equipment trust certificates to the value of \$520,000 to be applied toward purchase of 10 locomotives at total cost of \$650,850.

Southern has ordered 3500 steel frame automobile cars from American Car & Foundry Co., in addition to 1500 hopper cars from Pressed Steel Car Co., as reported last week.

## PERSONAL

S. L. BENGTSON, of the International Construction Co., London, England, which has been appointed consulting engineer on the new iron and steel plant to be erected at Pretoria, South Africa, by the South African Iron & Steel Corporation, will arrive in New York, Oct. 22, on the Majestic, for a short tour of American steel centers. He will make his headquarters at the National Bank of South Africa, 44 Beaver Street, New York.

M. E. DANFORD, for some seven years works manager of the Middletown division of the American Rolling



M. E. DANFORD

Mill Co., Middletown, Ohio, has been appointed assistant vice-president of the company. He has been connected with the company since Feb. 1, 1910.

E. J. MOHR, for many years sales manager for the Kinite Corporation, Milwaukee, has become manager of industrial sales for the Gunit Corporation, Rockford, Ill.

DR. RICHARD MOLDENKE, consultant in foundry operations, Watchung, N. J., spoke on the evolution of the foundry at the first fall meeting of the Philadelphia Foundrymen's Association, Oct. 9, at the Manufacturers Club, Philadelphia.

DWIGHT CLARK WHEELER, who has been prominently identified with the growth of the Acme Shear Co., Bridgeport, Conn., has been elected president of that company.

HEINRICH CALLOW, president, Callow & Co., Bielefeld, Germany, machinery manufacturers, is spending several weeks in the United States visiting industrial plants.

ROBERT C. NORTON, Oglebay, Norton & Co., ELTON HOYT, II, Pickands,

Mather & Co., and T. P. DURELL, president American Fork & Hoe Co., have been elected directors of the American Shipbuilding Co. Mr. Hoyt fills the vacancy caused by the death of Henry S. Pickands.

A. E. MCKINSTRY, vice-president International Harvester Co., Chicago, was elected president of the National Association of Farm Implement Manufacturers at its thirty-sixth annual convention, held in Cleveland last week. H. G. NEWCOMER, president, Eureka Mower Co., Utica, N. Y., was named executive chairman.

T. H. KING and WILLIAM J. LEPPERT have organized the Maryland Machinery Co., with offices in the Snow Building, Baltimore. The company will represent manufacturers of machine tools, woodworking machinery, power transmission machinery and steam pumps in Maryland, Virginia and the District of Columbia. Mr. King was for many years with the Landis Tool Co. and the Wayne Tool Co., Waynesboro, Pa. Mr. Leppert was for a number of years with the Aumen Machinery Co., Baltimore.

KENNETH B. LEWIS, manager of sales, wire machinery department, Morgan Construction Co., Worcester, Mass., is returning from Mexico this week. He has been there in the interests of the company in connection with the installation of multiple-head drawing blocks of the Morgan-Connor type.

C. E. RUTH, formerly in the engineering department of the Rust Engineering Co., Pittsburgh, has become district sales manager for northern Pennsylvania, Ohio, western New York and Ontario, of the Homestead Valve Mfg. Co., Coraopolis, Pa.

GEORGE M. DEMOREST, who has been engaged in sales promotion work on speed reducers, power transmission and conveyor equipment for over 12 years, has been appointed Pittsburgh district representative for the Palmer-Bee Co., Detroit.

ROBERT E. MCGILL and EDWARD R. BRAZEL have been appointed Western manager and district manager respectively with offices in San Francisco, for Aluminum Industries, Inc., Cincinnati, to handle the distribution of Permite-Diamond products.

ALEXANDER F. JENKINS, president Alexander Milburn Co., Baltimore, sailed Oct. 12 for England.

HARRY W. CROSS, for the past five years vice-president of the Arch Machinery Co., Pittsburgh representative of Manning, Maxwell & Moore, Inc., New York, has been appointed

works manager of the latter company's Putnam Machine Works, Fitchburg, Mass., succeeding W. O. FORMAN, who has resigned.

A. H. D'ARCAMBAL, consulting metallurgist, Pratt & Whitney Co., Hartford, Conn., will address the Worcester chapter of the American Society for Steel Treating, Oct. 17, at Rebboli's Restaurant, Worcester, Mass. His subject will be "The Machineability of Metals."

CHARLES REES, who has been consulting engineer to the Vanadium Corporation of America, New York, since 1923, has been appointed vice-president, in charge of mining operations. After his graduation from the University of Wisconsin, he engaged in mining activities for various com-



CHARLES REES

panies, including the Minnesota Iron Mining Co., the Oliver Iron Mining Co. and the Midvale Steel & Ordnance Co.

W. WORLEY KERLIN, research chemist, Enterprise Sand Co., Conneaut, Ohio, will speak on "Grain Sizes and Its Effect on the Properties of Molding Sand" at the regular monthly meeting of the Pittsburgh Foundrymen's Association, to be held at the Fort Pitt Hotel on Oct. 21.

G. H. HEDRICK, recently vice-president of the Thomas Spacing Machine Co., has been appointed chief engineer of the Gem Mfg. Co., Pittsburgh, maker of railroad sheet metalware and special stampings.

H. A. BRASSERT, president, H. A. Brassert Co., Chicago, has returned from England, where his firm has been retained as consultant for a number of iron and steel companies of England and Scotland.

JOSEPH F. PFLUM has been appointed representative in the Dayton and Cincinnati districts, with offices at 3721 St. Lawrence Avenue, Cincinnati, by the Reed-Prentice Corporation, Worcester, Mass.

CLINTON S. DARLING, for several years in charge of sales in the western territory for the Pennsylvania Crusher Co., Philadelphia, has been appointed assistant to COL. GUILFORD C. BABCOCK, president, 4-One Box Machine Makers, Rockaway, N. J., the licensing company for the manufacture and sale of 4-One wirebound boxes.

JAMES F. CROFT, who resigned as metallurgist for Mackintosh-Hemphill Co., Pittsburgh, on Sept. 15, has become metallurgist, in charge of the roll department, of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

J. P. GILL, metallurgist for the Vanadium Alloys Steel Co., Latrobe, Pa., will address the New Haven chapter of the American Society for Steel Treating on "Tool Steels—Their Manufacture, Inspection and Selection" in the Bristol Mfg. Co. auditorium, Waterbury, Conn., Oct. 17.

ERNEST MOELLER has been elected president of the newly-formed Industrial & Combustion Engineering Corporation, 303 Protective Life Building, Birmingham. Vice-presidents are GEORGE C. MAPES and LOUIS LYON, JR.

IRWIN B. LAUGHLIN, who has been appointed United States Ambassador to Spain by President Hoover, was formerly identified with the Jones & Laughlin Steel Corporation, Pittsburgh, having served as treasurer of the company until 1903, when he resigned to enter diplomatic service.

WALTER C. ALLEN, president, Yale & Towne Mfg. Co., Stamford, Conn., has been made a director of the Western Electric Co., Inc.

BRADLEY STOUGHTON, professor of metallurgy, Lehigh University, Bethlehem, Pa., has been awarded the Grasselli Medal for 1929 for his paper "Light Structural Alloys" written several years ago. The formal presentation will be made on Nov. 8 by the American Chemical Society.

### Wages of European Steel Workers Advancing

HAMBURG, GERMANY, Sept. 30.—Wages continue to advance in the European steel industry. Wages in Luxemburg were increased 5 per cent in September, the second advance this year, and Czechoslovakian steel producers have granted an increase of 2½ to 5 per cent and a larger bonus for overtime work, effective Oct. 1. Polish steel workers are seeking a 10 per cent wage increase, and it is believed probable that the mills will agree to advances of 5 to 7½ per cent. Steel workers in Belgium and employees in the heavy hardware industry in Germany are seeking further wage increases.

## OBITUARY

DAVID L. EYNON, president Pittsburgh Rolls Corporation, Pittsburgh, whose sudden death on Oct. 5 was mentioned in THE IRON AGE last week, had long been prominently identified with the roll industry in this country. He was one of a group of Welshmen who have contributed heavily to the development of roll turning, roll design and rolling mills in the United States, which among others included the late D. R. Mathias, who had a prominent part in the construction of the mills of the Illinois Steel Co., and James E. Jones, who now is superintendent of the roll department,



D. L. EYNON

South works, Illinois Steel Co., Chicago. Mr. Eynon, who was born in Dowlais, Wales, in 1861, came to this country when he was 18 years of age and located in Philadelphia, where he joined his cousin, William D. Eynon, then in charge of the roll shop of Hughes & Patterson. He left that company a few years later to take a position with the Pencoyd Iron Works, now the Pencoyd works of the American Bridge Co. His next connection was with a rolling mill company in Bridgeport, Conn., following which he went to the Colorado Fuel & Iron Co., Pueblo, Colo., and became associated with James E. Jones. In 1904, after a brief identification with the Jones & Laughlin Steel Co., Pittsburgh, he joined the Phoenix Roll Works, Pittsburgh, as superintendent. When that company was reorganized in 1917 as the Pittsburgh Rolls Corporation, he became its first president.

HARRY SHEAFF PAUL, for many years president of the Verona Tool Works, Verona, Pa., died on Oct. 10, at his home in Oakmont, Pa., aged 73 years. He was born at Pittsburgh, and became associated with the Verona company soon after leaving school. He served for a time as superintendent and later became president, having served in that capacity for 30 years prior to his retirement 10 years

ago. He had been active in political and financial circles in western Pennsylvania.

GEORGE F. ERNST, sales manager of the A. Leschen & Sons Rope Co., St. Louis, died in that city on Oct. 9, aged 64 years.

FRANCIS WILLIAM GILBERTSON, chairman of the board and managing director, W. Gilbertson & Co., Ltd., Pontardawe, Glamorgan, Wales, died Oct. 8, aged 56 years. He was closely associated with the Welsh steel, tin plate and galvanizing industries for many years, was chairman of the Swansea Metal Exchange, had been a member of the Iron and Steel Institute since 1896, and was a past member of council of the institute.

JOHN WILLIAMS, managing director, Clayton Tin Plate Co., Ltd., Pontardulais, Wales, died Oct. 8, aged 69 years. He was one of the pioneers of the Welsh tin plate trade and a member of the Iron and Steel Institute since 1908.

FRANK HENDERSON, manager of the Cleveland office of the Combustion Engineering Corporation, died suddenly on Sept. 25, aged 53 years.

STEPHEN BALKWILL, president, Balkwill Manganese Crossing Co., Cleveland, and associated with the Cleveland Frog & Crossing Co. for 23 years, died Oct. 9, aged 58 years. His business connections also included a part ownership in the Cleveland Steel Casting Co. He attended Case School of Applied Science, Cleveland, and was a member of a number of engineering societies.

FREDERICK KAHL, owner and founder of the Frederick Kahl Iron Foundry, Detroit, died at his home in Detroit on Oct. 11, aged 72 years. In his youth Mr. Kahl entered the employ of the Frontier Iron Works in Detroit. In 1888 he organized his own company, of which he was the active head until illness compelled him to retire two years ago.

WILLIAM D. JOHNSON, president of the Milwaukee Boiler Co., Milwaukee, which he founded, died Oct. 7, following an illness of one year, which did not bar him from retaining active charge of the business until a few weeks before his death. He was born in Milwaukee in 1869.

JOSEPH E. HUSTON, secretary and treasurer, Connersville Blower Co., Connersville, Ind., died of a heart attack at his home in Connersville, Sept. 22, aged 67 years. He had been connected with the company since its inception in 1893.

GEORGE B. CURTIS, vice-president and treasurer of the St. Louis Struc-

tural Steel Co., East St. Louis, Ill., died in his home there of heart disease after an illness of several weeks, aged 57 years.

W. A. KINGSLEY, for many years active in the iron and steel industry, died suddenly at Orlando, Fla., on Oct. 12. He began his business career nearly 50 years ago with the Pomeroy Iron & Steel Co., Pomeroy, Ohio, of which he was general manager. Later he went with the Union Iron & Steel Co., Youngstown, and when that company was taken over by the Carnegie Steel Co., he was made general manager of the hoop mills in the Youngstown district. Upon the formation of the Steel Corporation, he became manager of sales at Chicago for the

American Steel Hoop Co. Later he served as manager of the General Fireproofing Co., Youngstown, and prior to this retirement, held a similar position at the Garry Iron & Steel Co., Cleveland.

R. W. BELL, formerly general superintendent of motive power for the Illinois Central, died suddenly Oct. 14. He retired from active service Oct. 1.

WILLIAM PAUL MARTIN, chairman of the board of directors of the Stromberg Electrical Co., Chicago, died of heart disease Oct. 14, aged 63 years. He was formerly general manager of the Union Carbide Co. and of the Peoples Gas Light & Coke Co., Chicago.

## Chicago's Expansion in Steel Production

### President Buffington of Illinois Steel Co. Tells of Its Beginnings and Growth

THE value to a community of an ample supply of iron and steel is universally recognized, and the extent of its development is regarded as a measure of community strength and commercial importance, said E. J. Buffington, president, Illinois Steel Co., in an address delivered Oct. 16 before the Chicago Association of Commerce.

The beginning of the industry in Chicago was about contemporaneous with the invention and use of the Bessemer process. In 1857 Capt. E. B. Ward, owner of a small iron furnace and bloomery in Wyandotte, Mich., built a blast furnace and rolling mills in Chicago on the north branch of the Chicago River. The plant was known as the North Chicago rolling mill. In 1864 the first steel ingots made in this country by the Bessemer process were produced in an experimental plant at Wyandotte, sent by sailing vessel to the North Chicago rolling mill and there were rolled into rails. These were the first steel rails made in the United States.

In 1869 ownership of the several plants in Chicago, Joliet and Milwaukee, was consolidated into one company and incorporated as the Illinois Steel Co. This was the first merger of important steel-producing interests in the United States, a forerunner of subsequent larger mergers which integrated a large part of the industry into companies owning many plants and large supplies of practically all essential raw materials.

Growth and development of the industry, especially during recent years, has been more rapid in the Chicago district than elsewhere in the United States. Between the years 1912 and 1928 annual steel production in the United States as a whole increased from 30,000,000 tons to approximately 50,000,000 tons, equivalent to an increase of 60 per cent, while production in the Chicago district increased

from 4,400,000 tons in 1912 to over 9,000,000 tons in 1928, or nearly 107 per cent.

It is estimated that the iron and steel industry in the Chicago district employs about 75,000 workmen and disburses payrolls aggregating \$150,000,000 annually. Production last year of over 9,000,000 tons of steel in the Chicago district required the assembly of approximately 60,000,000 tons of raw materials.

### Nine-Month Record in Fabricated Steel

WASHINGTON, Oct. 15.—Fabricated structural steel orders reported in September totaled 246,016 tons, or 82 per cent of the capacity of the 296 firms making returns to the Department of Commerce. Bookings reported in August were 300,008 tons, according to 223 firms, representing 95 per cent of their capacity.

Computed orders were 315,700 tons in September, compared with 365,750 tons in August. Computed shipments were 319,550 tons, or 83 per cent of

### Navy Calls for Bids on 21,490 Tons of Steel

WASHINGTON, Oct. 15.—The Navy Department has sent out schedules to steel manufacturers covering requirements for the three light cruisers being built in navy yards, and will open bids on Nov. 1 for approximately 7800 tons of special treatment plates and on Nov. 5 it will open bids for 8593 tons of medium plates, 637 tons of high-tensile plates, 3800 tons of medium shapes and 300 tons of high-tensile shapes.

capacity, against 346,500 tons, or 90 per cent of capacity in August.

Computed bookings for the first nine months of the current year were 2,952,950 tons, against 2,553,750 tons for the corresponding period of last year. Computed shipments were 2,671,900 tons and 2,252,250 tons respectively.

Both orders and shipments, on the computed basis, were higher for the nine-month period than ever before.

### Europe's Steel Cartels Face Critical Situation

LONDON, ENGLAND, Oct. 7.—It now leaks out that the steel conference at Vienna [see page 1080, this issue] came near being a failure. The final agreements were the result of compromises, and the extreme feeling now is that if the European steel industry does not brace up in the next three or four months the rail cartel as well as the general steel cartel may expire.

Increased quotas were demanded by the Belgians and by most of the Germans and increased total tonnages. In the German delegation there was a split as to the allotments among the German plants — differences which some think will take five or six months to settle. The French, on the other hand, asked for lower rollings by 10 per cent or so.

The situation was saved, at least temporarily, by proroguing the meeting to Dec. 14 at Düsseldorf, by provisionally continuing the cartel until March 31, by agreeing to hold the fourth quarter rollings at the third quarter basis and by reducing penalties for exceeding quotas to 25 per cent of the previous amounts.

### Malleable Castings Well Above Last Year

WASHINGTON, Oct. 15.—Orders for malleable castings in September totaled 50,464 net tons, against 61,982 tons in August, according to reports received by the Department of Commerce from the principal manufacturers. Production amounted to 57,380 tons, representing 59.7 per cent of capacity, against 68,651 tons, or 70 per cent of capacity. Shipments were 61,492 tons, compared with 69,240 tons.

Orders for the first nine months of the current year were 638,336 tons, against 572,264 tons for the corresponding period of last year. Production was 664,772 tons, compared with 586,453 tons last year.

### Higher Factory Earnings

Average weekly earnings in representative New York State factories are reported by the State Industrial Commissioner at \$30.08 for August. This is nearly 1 per cent above the \$29.80 for July and, with the exception of the \$30.35 last March, it was the highest for any month so far this year. With the further exception of \$30.12 last December, it is the highest for any month on record.

# Pig Iron. Most Active Item in Europe

British, Belgian and German Operations Heavy—Larger Production of Steel in Several Quarters—Wire Situation Tense

(By Cable)

LONDON, ENGLAND, Oct. 14.

**P**IG IRON demand is sustained and supplies are going into direct consumption, but steel output declined in September and, with export demand for pig iron poor, furnaces are somewhat apprehensive of the future. Cleveland furnaces are generally well sold for the current month, but increasing costs are a disquieting factor.

Hematite iron is active in both the home and export markets so that October deliveries have become less easy to obtain. Prices are unchanged, but concessions are less common.

Finished steel is dull. Some small business has been taken for India and Canada, but export demand is generally quiet. In the domestic market fresh ship contracts are releasing more steel tonnage, but plate mills, especially, are still in need of work.

September exports of pig iron were 32,500 tons of which the United States received 65 tons. Total exports of iron and steel were 299,500 tons.

Continental steel sales here are quiet and prices sagging, especially in semi-finished material and merchant bars. Welsh consumers have bought some sheet bars, but other consuming industries show but little interest in foreign material.

Tin plate demand is good, with 19s. to 19s. 3d. (\$4.60 to \$4.66) per base box, f.o.b. works port, paid for substantial quantities. Mills are well

sold ahead and the general outlook is bright.

Galvanized sheets are quiet and prices easier. Black sheets, Japanese specifications, continue inactive.

Dorman, Long & Co. and Bolckow,

Vaughan & Co. have officially announced a plan for merger of their interests, which provides for exchange of shares. The total capital of the new corporation will exceed £17,000,000 (\$82,450,000).

## Cartel Meeting Results in Compromises

Extended Six Months for Discussion—Reduction of German Penalties Equivalent to Quota Increase

DÜSSELDORF, GERMANY, Sept. 30.—The provisional extension of the International Steel Cartel until March 31, 1930, gives more time to the commission appointed to prepare a definite renewal plan. The official statement of the Vienna meeting of the cartel was that "all groups showed a conciliatory spirit and the unanimous wish is to attain a definite agreement as soon as possible."

From unofficial sources it appears that the meeting was not nearly so satisfactory as the public announcements imply. Opposition developed to the German demand for an increased allotment and a compromise was reached by reducing the German penalties for excess output to 25 per cent of the former amounts. Germany had been paying \$1 a ton for over-production up to 7½ per cent in excess of the quota, \$2 a ton on the next 2½ per cent of excess output and \$4 a ton on production over 10

per cent more than the quota. Under the provisional agreement for the next two quarters, Germany will pay only 25c. a ton on the first 7½ per cent of excess tonnage, 50c. a ton on the next 2½ per cent of excess and \$1 on production over 10 per cent.

In certain quarters it is pointed out that these penalties are so small that, although the German allotment has not been increased, German producers may exceed their quota to a greater extent than formerly at a lower cost in fines. The fact that the total annual allotment for the entire cartel has been continued at 32,000,000 tons is causing some speculation in the steel industry as to future results of what has already been found to be excess production. It is believed that any effort to stabilize export prices, as has been suggested, will prove impossible with such a heavy production program effective.

Extension of the cartel for another

British and Continental European Export Prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp, with the £ at \$4.85

### British Prices, f.o.b. United Kingdom Ports

Cleveland No. 3 foundry	£3 12½s.	to £3 13½s.	\$17.58	to \$17.82
East Coast hematite...	3 16½	to 3 17	18.51	to 18.63
Ferromanganese, export	13 10	to 14 0	65.47	to 67.90
Billets, open-hearth...	6 5	to 6 7½	30.31	to 30.92
Sheet bars, open-hearth	6 5	to 6 10	30.31	to 31.52
Black sheets, Japanese				
specifications	12 12½		61.22	
Tin plate, per base box	0 19	to 0 19¼	4.60	to 4.66
Rails, 60 lb. and heavier	7 15	to 8 15	37.59	to 42.43
Cents per Lb.				
Steel bars, open-hearth	7 15	to 8 10	1.67	to 1.84
Beams, open-hearth...	7 2½	to 7 12½	1.55	to 1.65
Channels, open-hearth...	7 7½	to 7 17½	1.60	to 1.71
Angles, open-hearth...	8 2½	to 8 12½	1.76	to 1.86
Ship plates, open-hearth	7 12½	to 8 2½	1.66	to 1.76
Black sheets, No. 24				
gauge	10 5	to 10 10	2.21	to 2.27
Galvanized sheets, No.				
24 gauge	13 2½	to 13 7½	2.84	to 2.89

### Continental Prices, f.o.b. Antwerp or Hamburg

Foundry iron, 2.50 to 3.00 per cent sil., 0.50 to 0.90 per cent phos.	£3 8s.	to £3 11½s.	\$16.49	to \$17.33
Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phos.	3 8	to 3 11	16.49	to 17.21
Billets, Thomas	4 14	to 4 15	22.79	to 23.03

Sheet bars, Thomas...	4 15	to 4 16	23.03	to 23.21
Wire rods, low C., No. 5 B.W.G.	6 5	to 6 6¼	30.30	to 30.61
Black sheets, No. 31			60.02	
gauge, Japanese	12 7½		31.16	to 31.52
Rails, 60 lb. and heavier	6 8½	to 6 10*	29.46	
Rails, light	6 1½			
Cents per Lb.				
Steel bars, merchant...	5 7	to 5 8	1.15	to 1.16
Steel bars, deformed...	5 6½	to 5 7	1.14	to 1.15
Beams, Thomas, British				
standard	5 0	to 5 4½	1.10	to 1.15
Channels, Thomas,				
American sections	5 14	to 5 18	1.24	to 1.27
Angles, Thomas, 4-in. and larger, over ¾-in. thick	5 3		1.11	
Angles, Thomas, 3-in.	5 10		1.19	
Ship plates, open-hearth				
inspected	7 8		1.63	
Hoop and strip steel				
over 6-in. base	5 12½	to 5 15	1.22	to 1.24
Wire, plain, No. 8 gauge	7 4	to 7 5	1.58	to 1.59
Wire, galvanized, No. 8				
gauge	8 18	to 9 3	1.92	to 1.99
Wire, barbed, 4-pt. No. 12 B.W.G.	11 5		2.43	
Wire nails, base	7 10	to 7 10½	\$1.62	to \$1.63 per keg
Wire nails, assortments, 1 to 6-in., keg	10 6½		2.23	

\*Open-hearth steel, 10s. (\$2.42) per ton extra.

six months gives time for negotiating the renewal of the German domestic syndicates. It is believed that the Ingot Steel Syndicate (Rohstahlgemeinschaft) will have been renewed by the end of the year. Many of the German selling syndicates expire about the middle of next year and their renewal depends largely upon an agreement between the Friedrich Krupp A. G. and the Mannesmann Tube Co.

### Wire Competition in Europe Brings Low Prices

HAMBURG, GERMANY, Sept. 30.—While the volume of business in the wire market on the Continent has been increasing, prices have been steadily declining. According to a report of the German Wire Manufacturers' Syndicate, orders during the first three weeks of September exceeded the August total, which was about 15 per cent larger than in July. Prices, however, are receding and galvanized wire has declined to £9 4s. per ton (2.02c. per lb.), bright wire to £7 5s. per ton (1.59c. per lb.) and barbed wire to £11 10s. per ton (2.53c. per lb.). Belgian mills are shading these prices in some cases by several shillings a ton.

The situation in the wire netting market is not much better than in wire. The discount from the British standard list is now 84 to 84¼ per cent, a record low price. Competition among Continental makers of wire netting has become so severe that certain mills have found it impossible to compete and Austrian and Czechoslovakian makers have withdrawn from the market. British manufacturers are also affected and, with their quotations 15 to 20 per cent higher than the Continental prices, are unable to sell wire netting except in such of their own markets as provide a preferential duty on British products.

### Italy Plans Regulation of Iron and Steel Industry

WASHINGTON, Oct. 11.—Considerable progress has been made toward outlining a plan to survey the entire Italian iron and steel industry for the purpose of determining the relationship of all its operations, according to an announcement forwarded to the Department of Commerce. One of the chief aims will be to find a means of restraining competition between individual producers, a condition which is reported to have led to serious disorganization in the domestic markets.

Meetings in connection with the survey have been attended by Government officials, representatives of industry and by Professor Guarnieri, commissioner of the National Fascist Metallurgical Association. As a result, it has been decided to take concerted action, with the support of the Italian Government, to reduce costs, systematize production, promote specialization and more efficient operation of plants, and to eliminate unnecessarily

long and costly transportation of material and products. This extensive program is said to cover only immediate purposes. Later an effort will be made to regulate the local market and stabilize prices "to the mutual benefit of both the producers and the consumers."

### Japanese Steel Imports Increasing

YOKOHOMA, JAPAN, Sept. 17.—Efforts to restrict importation of foreign steel appeared somewhat successful in 1928, but in the first half of this year steel imports registered a considerable increase. A total of 60,690 tons of steel bars was imported in the six months, an average of more than 10,000 metric tons monthly, compared with an average in 1928 of slightly less than 5000 tons a month. Imports of angles in the first half of this year totaled 14,242 metric tons, an average of 2372 tons a month, compared with about 1500 tons a month last year. The only exception to this increase was rails, the imports of which decreased from an average of 3611 tons a month in 1928 to 2828 tons a month in the first half of this year.

### International Tube and Wire Rod Cartels Renewed

LONDON, ENGLAND, Sept. 30.—A feature of the conference of the International Wire Rod Cartel at Brussels was the agreement of the French members to an extension of the cartel until the end of 1930 without any stipulation that a French wire manufacturers' syndicate must be established by that time.

Although no changes were decided upon at the recent meeting of the International Tube Cartel, it is understood that some serious differences of opinion have developed between the Continental producers and the British, American and Canadian manufacturers of tubes. Also, German mills are dissatisfied with their production quota.

### Germany Expects Orders from Persian Railroad

HAMBURG, GERMANY, Sept. 30.—Contracts for locomotives, cars and track equipment are expected from Persia. The Julius Berger A. G. is the contractor on the northern section of the Persian railroad, which will be 1600 km. (994 miles) long and is to be completed by the end of 1932. The German contractor announces that the first 85 km. (53 miles) of the road has been finished and the Persian Government will shortly inquire for the necessary equipment and rolling stock for that section.

The American Ceramic Society will hold its thirty-second annual meeting in the Royal York Hotel, Toronto, Canada, the week of Feb. 16, 1930.

### British Iron and Steel Output in September

LONDON, ENGLAND, Oct. 12. (By Cable).—Pig iron production in September was 664,600 gross tons and that of steel ingots and castings 847,900 tons. This is the third largest pig iron output this year while the steel production is the second largest. The peak in steel was at 859,900 tons in March.

Comparison of recent output with other periods is as follows:

	Pig Iron, Gross Tons	Steel Ingots and Castings, Gross Tons
1913—Av. monthly..	855,000	638,600
1920—Av. monthly..	669,500	755,600
1922—Av. monthly..	408,500	490,100
1923—Av. monthly..	620,000	706,800
1924—Av. monthly..	609,900	685,100
1925—Av. monthly..	519,700	616,400
1926—Av. monthly..	203,500	296,700
1927—Av. monthly..	607,800	758,200
1928—Av. monthly..	550,900	710,400
1929—Av. first half..	599,600	812,800
1929—August .....	682,000	753,300
1929—September ..	664,600	847,900

### India and United States Ship Scrap to Japan

YOKOHOMA, JAPAN, Sept. 17.—Imports of iron and steel scrap at Wakamatsu, site of the Government Steel Works, have been large this year, with the United States and India furnishing practically the entire tonnage. In the first six months of this year the Government works received 79,719 metric tons of scrap, of which 38,857 tons was from the United States and 39,050 tons from India. All other countries contributed only 1812 tons of the total. This compares with 77,640 metric tons imported at Wakamatsu in all of 1928.

### German Railroads to Spend \$50,000,000

HAMBURG, GERMANY, Sept. 30.—The equipment purchasing program of the German Railroad Corporation for the first half of 1930 has been announced and includes 50 express locomotives, to cost about 7,000,000 m. (\$1,666,000); passenger and freight cars, calling for a total expenditure of 70,000,000 m. (\$16,660,000), and track equipment valued at about 140,000,000 m. (\$33,320,000).

### Belgium Importing More Pig Iron

WASHINGTON, Oct. 15.—The demand of the Belgian iron and steel industry for foreign pig iron is steadily growing, according to a report received by the Department of Commerce from Berlin. During the first seven months of 1929, pig iron imports into Belgium, including Luxemburg, totaled 407,000 metric tons, compared with 281,000 tons for the corresponding period of last year.

Exports of pig iron from Germany during the seven months of the current year were more than 135,000 metric tons.

# Machinery Markets and News of the Works

## Tool Prospects Are Bright

Builders Have Three Months' Backlogs—Norfolk & Western Puts Out Inquiry

**A**LTHOUGH machine tool sales have been only moderate in volume, prospects for increased buying have brightened as a result of interest stimulated by the National Machine Tool Exposition at Cleveland.

Despite the fact that the index of the National Machine Tool Builders' Association shows that September orders were the lowest of the year, the ratio of unfilled orders to shipments, at 2.76, reached a new high level, indicating that manufacturers have backlogs representing nearly three months' full operations.

The slackening in demand is attributed in large measure to the almost total absence of automobile companies from the market. A large percentage of the total machine tool business in the past few years has come from the motor car industry and the temporary halt in bookings from that source has made it neces-

sary for builders to look to other fields for current orders.

Signs of a revival of interest on the part of railroads have appeared. The Norfolk & Western has put out an inquiry for 33 tools and a number of miscellaneous equipment items. The Santa Fe and the Chicago, St. Paul, Minneapolis & Omaha also are taking bids on a few machines.

The Pullman Co. is reported to have closed for tools for its Buffalo plant. A leading can maker is expected to buy a liberal amount of machine tool equipment for its Cincinnati plant, which is engaged in the manufacture of can making machinery. The Westinghouse company's fourth quarter list is now out and some items already have been purchased.

The International Harvester Co. has bought \$100,000 worth of reconditioned tools for installation in its Weber works at Chicago.

## New York

**N**EW YORK, Oct. 15.—Machine tool buying in this district, which fell off somewhat in the two weeks preceding the National Machine Tool Exposition and in the week in which the exposition was taking place, revived considerably in the past week. Nearly all machine tool sellers who visited the exposition brought back a number of tentative orders and a fresh accumulation of prospects. If most of these promises of business mature, the machine tool industry will get a good volume of orders from this district during the next several weeks.

New York City Airport, Inc., care of Lawrence Halleran, Halleran Agency, 63 Broadway, Flushing, L. I., real estate, recently formed by Mr. Halleran and associates, has acquired 305 acre tract between Flushing and College Point, as site for airport, with facilities for seaplanes. Plans will be prepared at once for group of hangars to house more than 100 airplanes, machine and repair shop, service plant, oil storage building and other units, to cost more than \$750,000

with equipment. Mr. Halleran will be president of new organization; Henry J. Dooley, vice-president; and E. E. Stapleton, treasurer.

Brooklyn Union Gas Co., 1721 Sheepshead Bay Road, Brooklyn, has plans for a two-story equipment repair, storage and distributing plant, including automobile service and repair shop for motor trucks, to cost over \$200,000 with equipment. Bloch & Hesse, 18 East Forty-first Street, New York, are architects.

Topping Brothers, Inc., 159 Varick Street, New York, manufacturer of marine and other heavy hardware, has filed plans for addition to seven-story factory, including improvements in present structure, to cost about \$300,000. Russell G. Cory, 30 Church Street, is architect and engineer.

Remington Automatic Quotation Board Co., New York, recently formed as a subsidiary of Remington Arms Co., 25 Broadway, has arranged for sale of stock issue to total \$1,700,000, part of proceeds to be used for manufacturing. Company will specialize in production of automatic-operated stock exchange and other record boards. Manufacture will be carried out under direction of parent company, with

main plant at Ilion, N. Y. Milton Reynolds is president.

T. F. Farrell, commissioner of canals and waterways, State Public Works Building, Broadway, Albany, N. Y., will receive bids until Nov. 1, for two hydraulic turbine units for use at Fort Edward, N. Y., with accessories, to cost \$6,500,000.

J. S. Kennedy, 157 Remsen Street, Brooklyn, architect, has plans for eight-story automobile service, repair and garage building, 100 x 160 ft., to cost more than \$300,000 with equipment.

Board of Trustees, New York Trade School, First Avenue and Sixty-seventh Street, New York, has awarded general contract to William Crawford, 7 East Forty-second Street, for two and one-half story addition, 200 x 225 ft., to cost \$500,000 with equipment. William Miltenberger is architect for board.

American Can Co., 120 Broadway, New York, has approved plans for immediate erection of plant unit at Simcoe, Ont., where property recently was acquired, to cost more than \$300,000 with equipment.

Western Electric Co., 195 Broadway, New York, manufacturer of telephone equipment, sound-producing mechanisms for motion pictures, etc., is disposing of stock issue to total \$30,000,000, part of proceeds to be used for plant expansion.

New York Power & Light Corporation, 126 State Street, Albany, N. Y., a subsidiary of Mohawk-Hudson Power Corporation, same address, plans extensions in hydroelectric generating plant at Spier River Falls, on Hudson River, to cost over \$1,000,000 with transmission lines.

Wallace & Tiernan Co., Inc., 11 Mill Street, Belleville, N. J., manufacturer of chlorine control equipment and parts, etc., has acquired local property for expansion. Present structure will be razed and plans drawn for new unit, to cost more than \$75,000 with equipment.

Packard Motor Car Co., Broadway and Sixty-first Street, New York, and 198 Central Avenue, Newark, has superstructure under way for three-story service, repair and sales building, 183 x 200 ft., at 637-43 Central Avenue, to cost more than \$400,000 with equipment. Present plant will be removed to new location. Albert Kahn, Inc., Marquette Building, Detroit, is architect and engineer.

Sonatron Tube Co., 57 State Street, Newark, manufacturer of radio tubes and equipment, has plans for a six-story addition, 70 x 120 ft., to cost over \$100,000 with machinery. Siegler & Greenberg, 164 Market Street, are architects.

American Machinery Supply Corporation, care of Charles J. McPhillips, Liberty Trust Building, Philadelphia, president, has leased two-story factory at 49-55 Frelinghuysen Avenue, Newark, for local plant, part of unit to be used for storage and distribution.

Kolster Radio Corporation, 200 Mount Pleasant Avenue, Newark, manufacturer of radio equipment and parts, is arrang-

ing for increase in capital from 1,000,000 to 1,500,000 shares of stock, no par value, part of proceeds to be used for expansion. Company recently merged with Earl Radio Corporation, 122 East Forty-second Street, New York.

Radio Corporation of America, Inc., Woolworth, Building, New York, manufacturer of radio broadcasting equipment, etc., is said to be planning two-story and basement experimental plant at Bound Brook, N. J., to cost about \$60,000 with equipment.

## Cleveland

**C**LEVELAND, Oct. 14.—The machine tool market was dull the past week. The spurt of buying that was expected to follow the machine tool show in Cleveland has not yet materialized. However, it aroused a great deal of interest in the new equipment exhibited and in addition to a good volume of orders placed developed numerous prospects for business as well as definite inquiries that are still pending. These are expected to stimulate activity in the next few weeks. Among the most active prospects is the American Can Co., which is in the market for considerable machinery for its Cincinnati plant. The automotive industry is buying practically no machine tools at present and the dullness of the market is largely due to lack of activity in that field.

Ohio Seamless Tube Co., Shelby, Ohio, will complete its \$400,000 plant extension program about Dec. 1. It is expected that new equipment will be in operation by first of year, increasing plant capacity about 40 per cent.

Newburgh Steel Co., 6318 Kinsman Road, Cleveland, will take bids for one and two-story addition to cost about \$50,000 with equipment. George S. Rider Co., Marshall Building, is architect and engineer. Maurice Cohen is president.

Cleveland Railway Co., Hanna Building, Cleveland, has awarded general contract to A. A. Lane Construction Co., 1869 East Fifty-fifth Street, for new shops, one-story, 50 x 150 ft., including mechanical repair, forge and tool shops, to cost about \$100,000 with equipment.

Middle States Airport Service, Inc., Akron, Ohio, care of C. W. Frank, Akron Savings & Loan Building, architect, has plans for hangar, with repair and reconditioning facilities, at Fulton field, to cost about \$70,000 with equipment.

Truscon Steel Co., 6100 Hydraulic Avenue, Cleveland, Hydraulic Pressed Steel Division, is planning one-story addition, 75 x 290 ft., to cost over \$60,000 with equipment. Headquarters are at Youngstown.

Willard Storage Battery Co., St. Clair Avenue and East 131st Street, Cleveland, has awarded general contract to H. M. Baruch, Los Angeles, for new plant at Montibello Park, near Los Angeles, to cost more than \$400,000 with equipment. All machinery will be electrically operated.

Reliance Mfg. Co., Massillon, Ohio, manufacturer of lock nuts, washers, etc., has awarded general contract to A. F. Wendling Co., 11 Buckius Street, for one-story addition, to cost \$45,000 with equipment.

Ohio Seamless Tube Co., Shelby, Ohio, has work under way on expansion to cost over \$350,000.

## The Crane Market

**I**NQUIRY is improving for overhead traveling cranes and sellers expect some active buying in the next few weeks. Business in locomotive cranes has also shown improvement with a number pending for railroads and more interest in buying shown by the smaller contractors. Included in pending locomotive crane business are two Diesel engine-driven cranes for the Baltimore & Ohio Railroad, a 50-ton and 25-ton cranes for the New York Central Railroad and four crawl-tread cranes for the Amtorg Trading Corporation, New York.

In the Chicago district the Norfolk & Western Railroad will buy a 10-ton, 23-ft. 10½-in. span electric traveling crane, a 20-ton trolley, a 50-ton stationary drop table and eight 4000-lb., 22-ft. lift electric hoists.

Among recent purchases are:

Phoenix Utility Co., 71 Broadway, New York, 27½-ton, 71-ft. 6-in. span, 2-motor, power house crane from Whiting Corporation.

Stevens & Wood, engineers, New York, 10-ton, 31-ft. 6-in. span hand power crane from Whiting Corporation.

Consolidated Gas & Electric Co., Baltimore, small capacity locomotive crane, reported purchased from Koehring Co.

Electric Power & Maintenance Co., Monroe and Eleventh Streets, Toledo, Ohio, has plans for one-story service and repair works, to cost about \$50,000 with equipment. Langdon, Hohly & Gramm, Security Building, are architects.

## St. Louis

**S**T. LOUIS, Oct. 14.—Guardian Aircraft Corporation, 2504 Texas Street, St. Louis, manufacturer of airplanes and parts, has plans for one-story plant at Moberly, Mo., to cost over \$40,000 with equipment. Ludwig Abt, Relgie Building, Moberly, is architect.

Mid-Continent Petroleum Corporation, 320 North Fourth Street, St. Louis, is considering new oil storage and distributing plant at Hannibal, Mo., to cost about \$45,000 with equipment.

Moon Motor Car Co., 4400 North Main Street, St. Louis, is planning to diversify line of production and will use part of plant for manufacture of new automatically operated machine for agricultural service, including parts production and assembling. Company will carry out expansion, continuing production of automobiles, and has arranged for stock issue of 100,000 shares, no par value, to be used in part for such purpose.

Patterson Steel Co., 801 North Xanthus Street, Tulsa, Okla., has plans for storage and distributing plant, 100 x 150 ft., and 33 x 100 ft., to cost about \$40,000 with equipment.

Swift & Co., Union Stock Yards, Chicago, have awarded a general contract to James T. Taylor, First National Bank Building, Fort Worth, Tex., for three-story plant at Ardmore, Okla., 76 x 130 ft., to cost about \$150,000 with equipment.

Transcontinental Air Transport, Inc., Syndicate Trust Building, St. Louis, and Curtiss Flying Service, same address, with main offices at 27 West Fifty-seventh Street, New York, has asked bids for aircraft buildings at St. Louis air

terminal, Highway No. 3, East St. Louis, Ill., including one-story motor torque building, 42 x 45 ft.; one-story repair and reconditioning shop, 120 x 213 ft.; and one-story shop, 50 x 101 ft., to cost over \$75,000 with equipment. Kenneth Franzheim, 345 Madison Avenue, New York, is architect.

Davis Boring Tool Co., St. Louis, has been organized to take over and expand company of same name with local plant at 6200 Maple Avenue, manufacturer of special boring tools, reamers, cutters, etc.

Massey-Harris Harvester Co., Fairfax Industrial District, Kansas City, Kan., has awarded general contract to Lonsdale Brothers Construction Co., Bryant Building, for one-story addition to assembling plant, to cost over \$40,000 with equipment. W. L. McLean is manager.

Buckley Aircraft Co., 148 North Fountain Street, Wichita, Kan., Roy D. Buckley, president, is considering new one-story plant near airport for parts production and assembling, to cost about \$45,000 with equipment.

Missouri & North Arkansas Railway Co., Harrison, Ark., has acquired 7-acre tract adjoining engine shops at Kinsett, Ark., and plans construction of engine house, machine shops, sheds for passenger equipment and other structures, to cost more than \$85,000 with equipment.

Evans-Wallower Zinc Co., East St. Louis, Ill., has plans for a lead plant, adjacent to its new electrolytic zinc plant, to cost \$1,000,000. It will be operated as a part of present plant and will use virtually same process of manufacture.

Granite City Steel Co., Granite City, Ill., is completing a new machine shop, 150 x 300 ft., at a cost of about \$250,000.

Hyman-Michaels Co., Railway Exchange building, St. Louis, has leased 20 acres of ground adjacent to its plant at Granite City, Ill., which will be used as a storage yard for relaying rails and for storage and repair of tank cars.

## Buffalo

**B**UFFALO, Oct. 14.—Plans have been filed by McCauley Metal Products, Inc., 660 Grant Street, Buffalo, for extensions and improvements to cost about \$30,000.

General Aviation Co., Syracuse, N. Y., operating an air service, plans removal of headquarters to Elmira, N. Y., where new hangar with repair and reconditioning facilities will be constructed. S. P. Voorhees is manager.

Firestone Tire & Rubber Co., Akron, Ohio, has taken out a permit to erect multi-story factory branch, storage and distributing plant at 1477 Main Street, Buffalo, to cost about \$100,000 with equipment.

Hydraulic Transmission, Inc., Canandaigua, N. Y., care of C. W. Willis, 176 East Main Street, Webster, N. Y., recently formed by Maynard E. Estey, R. F. D., Canandaigua, and associates, with capital of \$20,000, is said to be planning operation of local plant for production of hydraulic transmission machinery and parts.

Motor Transit Management Co., 1157 South Wabash Avenue, Chicago, has plans for one-story automobile service, repair and garage building at Syracuse, N. Y., to cost about \$100,000 with equipment.

Dahlstrom Metallic Door Co., Buffalo Avenue and East Second Street, Jamestown, N. Y., manufacturer of fireproof doors, sash, elevator enclosures, etc., has

plans for two-story addition, including improvements in present plant, to cost about \$10,000. Oliver Johnson, Fenton Building, is architect.

Consolidated Aircraft Corporation, 2050 Elmwood Avenue, Buffalo, is considering expansion at local plant in connection with removal of works of Thomas-Morse Co., Ithaca, N. Y., a subsidiary, to Buffalo, where production will be concentrated. Thomas-Morse Co. specializes in manufacture of all-metal single-motored planes open cockpit observation type, and will continue this line at Buffalo. Contract has recently been secured from Army Department for 70 units of this kind. Lawrence D. Bell is in charge of plant operations. Parent organization is completing plans for establishment of service and repair plants in different parts of country, initial units to be located in Canada and Southern California.

## New England

**B**OSTON, Oct. 14.—Machine tool bookings the past week exceeded those for any week in some time. They included boring mills for 22 weeks' delivery, lathes for April delivery, a jig borer for 32 weeks' delivery, and shapers and milling machines, also for extended delivery. If dealers secure one-third of the business during the remainder of this month on which quotations have been made, October will make a record. Prospective business includes lots of one, two and three machines to the individual buyer and it is estimated that the total number involves nearly 500 tools.

Used tool dealers are having no difficulty in selling every conditioned lathe they can obtain. There is an active demand for shapers and milling machines, as well as horizontal boring mills. One local used tool house is maintaining a night and day force for reconditioning tools.

New England airplane and parts manufacturers continue to operate under pressure. Pratt & Whitney Aircraft Corporation, Hartford, has booked orders for 350 engines and parts having an approximate value of \$2,355,000. This company has sufficient business on its books to maintain operations at capacity until June.

Small tool manufacturers in this territory state that 1929 will be the greatest year of production on record.

Lever Brothers Co., Cambridge, Mass., soap, has closed bids on a coal hopper. Purchase of conveying equipment is under consideration.

William E. Arnold Co., 17 Center Street, Malden, Mass., is building a one-story machine shop addition, to cost \$20,000 without equipment.

Bay State Abrasive Products Co., Westboro, Mass., has started work on a one-story plant, 80 x 100 ft. Some equipment is still to be purchased.

Terry Steam Turbine Co., Hartford, Conn., has plans for a one-story boiler plant, 50 x 50 ft. Bids for equipment will be taken later.

Franklin Foundry, West Glenwood Avenue, Hyde Park district, Boston, last week suffered considerable loss by fire.

United Aircraft & Transport Co., Inc., East Hartford, Conn., has awarded a contract for a power house, 50 x 120 ft.

Atlantic Wire Co., Church Street, Branford, Conn., has begun construction of one-story addition, 60 x 60 ft. Leo F.

Caproni, 1056 Chapel Street, New Haven, Conn., is engineer, in charge.

Martin Trailer Co., Westfield, Mass., manufacturer of motor trailers and parts, plans new one-story factory, 80 x 100 ft., to cost about \$45,000 with equipment.

New England Power Association, Worcester, Mass., has arranged an expansion program to cost about \$60,000,000 over a 36 months' period, including construction of hydroelectric generating plant at Fifteen-Mile Falls, N. H., now in progress, representing an investment of \$40,000,000, including steel tower transmission lines. About \$15,000,000 will be expended for increased power and transmission facilities in Massachusetts, and \$5,000,000 for similar work in Rhode Island for its subsidiary, Narragansett Electric Co., Providence. Frank D. Comerford is president of parent organization.

Cochrane Chevrolet Co., Main Street, Bridgeport, Conn., local representative for Chevrolet automobile, has plans for three-story addition to service, repair and sales building, to cost about \$100,000 with equipment. Fletcher-Thompson, Inc., 542 Fairfield Avenue, is architect and engineer.

Strathmore Paper Co., Mittineague, Mass., has plans for addition to mill at West Springfield, Mass., to cost about \$140,000 with equipment.

Westfield Mfg. Co., Westfield, Mass., manufacturer of bicycles, children's vehicles, parts, etc., has arranged for a stock issue to total \$1,642,000, part of proceeds to be used for expansion.

Sikorsky Aircraft Co., Lordship, Bridgeport, Conn., has plans for one and two-story addition, 200 x 250 ft., to cost over \$90,000 with equipment. Fletcher-Thompson, Inc., 542 Fairfield Avenue, Bridgeport, is architect and engineer.

F. S. Payne Co., Radcliffe Avenue, Cambridge, Mass., manufacturer of electric power and hydraulic elevators, parts, etc., has awarded general contract to Walsh Brothers, 150 Hampshire Street, for two-story machine shop addition, 50 x 110 ft., to cost about \$45,000 with equipment.

## Philadelphia

**P**HILADELPHIA, Oct. 14.—Contract has been let by United Motors Service, Inc., 342 North Broad Street, Philadelphia, an interest of General Motors Corporation, to Golder Construction Co., Insurance Co. of North America Building, for two-story service, repair and sales building, to cost \$150,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect and engineer.

Board of Education, Nineteenth and Ludlow Streets, Philadelphia, is considering installation of manual training equipment in new four-story junior high school to cost \$1,200,000, for which bids are being asked on general contract until Nov. 5. Irwin T. Catharine is architect for board.

Monroe Calculating Machine Co., Inc., 2020 Market Street, Philadelphia, manufacturer of computing machines and parts, with main plant at Orange, N. J., has leased building at 2039 Arch Street, for new local factory branch and distributing plant.

Board of City Commissioners, Ocean City, N. J., has authorized purchase of 130-acre tract on Bay Avenue, as site for municipal airport, and will have plans drawn in near future for hangars, repair and reconditioning shop, oil storage and

other field units, to cost more than \$85,000.

National Casket Co., 60 Massachusetts Avenue, Boston, has plans for three-story factory branch and distributing plant at Scranton, Pa., to cost over \$75,000 with equipment. John H. Weida, 1425 Dickson Avenue, Scranton, is architect.

William J. Kuntz, 544 East Boundary Avenue, York, Pa., and associates have organized Lime & Hydrate Plants Co., to operate a local plant to manufacture equipment for lime production, mechanical dryers, and other products. Samuel LeRoy Jacobs, York, is also interested in new company.

Safe-Guard Check Writer Corporation, 5 Beekman Street, New York, with plant at Lansdale, Pa., has purchased plant and business of Repeater Stamp & Dupli-cator Corporation, 114 East Thirty-second Street, New York, manufacturer of patented devices for reproduction purposes. Purchasing company will remove New York factory to Lansdale, where increased facilities will be provided. Company recently acquired Hercules Check Certifier Co., manufacturer of check protecting machines and parts, and will develop capacity for this product at Lansdale plant.

W. P. Paul Co., Drexel Building, Philadelphia, manufacturer of forgings, etc., plans rebuilding part of machine shop at 1013 North Front Street, recently damaged by fire.

## Chicago

**C**HICAGO, Oct. 14.—A good sized list of machine tools and mechanical equipment for the Norfolk & Western, several small lot inquiries by Western railroads and more active work on 1930 budgets are reviving interest in railroad buying. The Santa Fe will purchase two shears and a floor grinder and the Chicago, St. Paul, Minneapolis & Omaha is in the market for an 18 x 3-in. double floor grinder and a 24-in. upright drill press.

Demand for used tools is unabated. The International Harvester Co. has recently closed for \$100,000 worth of reconditioned tools which are being placed in the Weber works, Chicago. Fresh inquiries this week have added little to the pending list, which is impressive. New sales were widely scattered and in no larger volume than in the first week of October. Bids are being tabulated on the list issued for a buyer in the Orient. It is reported that the Pullman Co.'s Buffalo list has been closed.

Norfolk & Western List:

One 30 x 36-in. jarring machine.

Two journal truing and axle turning lathes.

One 24-in. x 8-ft. engine lathe.

One 48-in. x 10-ft. gap lathe.

One 90-in. driving wheel lathe.

One heavy-duty turret lathe.

Twenty-eight locomotive blowers, with apron, for 24-in. diameter stacks.

Two 36 x 36-in. x 36-in. x 12-ft. planers.

Two 250 gal. per min. centrifugal pumps, 345-ft. head, water temp. 200 deg. Fahr.

One 600 gal. per min. portable gas-engine driven centrifugal pump.

One four-cylinder single-acting pump, 25 gal. per min., 1500 lb. head.

Three 500-cu. ft. per min. cross-compound compressors, synchronous motor drive.

Five automatic feed water regulators.

Two 400-hp. boilers, 125-lb. pressure.

One 364-hp. boiler, 125-lb. pressure.

One 10-ton crane, 23-ft. 10 1/2-in. span.  
 One 20-ton trolley crane.  
 One Whiting 50-ton drop table.  
 Two 16-in. drill presses.  
 One 6-ft. radial drill.  
 Five 18 x 3-in. double-floor grinders.  
 One internal grinder.  
 One 7 x 1-in. floor grinder.  
 One bevel gear cutter.  
 Eight 4000-lb., 22-ft. lift, electric hoists.  
 Two drop hammers.  
 One 8000-lb. steam hammer.  
 One 1/4 to 2-in. pipe cutter.  
 One 50-ton forcing press.  
 One 750-ton hydraulic press.  
 One 36-in. crank shaper.  
 One 32-in. crank shaper.  
 One pneumatic flanging press, 3/4-in., 100 lb. pressure.  
 One dumping platform electric truck.  
 One 2 1/2-ton auto truck.  
 One 1-in. bolt-heading machine.  
 One car-type core oven 8 1/2 x 17 1/2 ft., 11 1/2 ft. high.  
 One 15-in. portable disk grinder.  
 Eight stationary tilting-type brass melting furnaces, 300 lb. per heat.  
 Miscellaneous list of motors and starters for machine drives, also transformers.

Continental Air Service, Municipal Airport, Chicago, will build a one and two-story hangar, 90 x 120 ft. R. V. Murison, Fisher Building, is architect.

Western Electric Co. has leased three-story building containing about 98,000 sq. ft. of floor area at 620 South Kilbourn Avenue, Chicago, for light manufacturing.

Eaton Metal Products Co., manufacturer of steel tanks, culverts and other metal products, with factories at Omaha, Neb., and Denver, has broken ground for a branch plant at Billings, Mont.

Reed & Prince Mfg. Co., Worcester, Mass., manufacturer of screws, rivets, burrs, nuts and bolts, has purchased 18,000 sq. ft. and a two-story building at 3635 Iron Street, Chicago, and will remove its present office and warehouse at 121 North Jefferson Street to new location.

Marvin Radio Tube Corporation, 1603 South Michigan Avenue, Chicago, has plans for enlargements, including installation of additional equipment, to cost more than \$75,000.

Douglas Iron Works, Inc., 1128 South Fairfield Avenue, Chicago, is taking bids on general contract for a one-story plant unit, to cost about \$100,000 with equipment. Structure will be used in part for ornamental iron work.

Minneapolis Gas Light Co., 16 South Seventh Street, Minneapolis, Minn., has plans for one-story equipment storage and distributing plant, with mechanical shops, etc., 80 x 200 ft., to cost about \$130,000 with equipment.

Cities Service Oil Co., 1745 University Avenue, St. Paul, Minn., is considering one and two-story storage and distributing plant, to cost \$100,000 with equipment.

American Steel & Wire Co., 208 South La Salle Street, Chicago, has plans for immediate erection of one-story unit, 80 x 800 ft., at Waukegan plant, primarily for wire drawing, increasing that division by about 25 per cent, estimated to cost \$800,000 with equipment.

Atchison, Topeka & Santa Fe Railway Co., Topeka, Kan., and 80 East Jackson Boulevard, Chicago, has awarded general contract to W. A. Smith & Son, Fort Madison, Iowa, for addition to engine house, with shop facilities, at Shopton, Iowa, to cost more than \$65,000 with equipment. E. A. Harrison is company architect.

Insulite Co., International Falls, Minn., manufacturer of insulating board products, is planning an expansion at local mill to double present output, to cost

more than \$100,000 with equipment. Company is a subsidiary of Backus-Brooks Co., Minneapolis.

Binks Mfg. Co., 3114-26 Carroll Avenue, Chicago, manufacturer of spraying equipment and devices, has purchased adjoining factory and will remodel for expansion. Present occupant, Hafner Mfg. Co., manufacturer of mechanical toy railroads and kindred products, will remove to a new plant on Kolmer Avenue, one-story, 100 x 300 ft., to cost about \$85,000 with equipment, for which superstructure will soon begin. Austin Co., is engineer and contractor for last noted structure.

Hayes-Custer Stove Co., Empire Street, Bloomington, Ill., is considering one-story foundry addition, to cost more than \$30,000 with equipment.

## South Atlantic

BALTIMORE, Oct. 14.—Contract has been let by Union Tank Car Co., Fourteenth Street and Fourth Avenue, Baltimore, to Austin Co., Philadelphia, for one-story plant unit, to cost about \$40,000 with equipment.

Gulf Refining Co., Frick Annex, Pittsburgh, has acquired waterfront property at Baltimore, vicinity of Frankfort and Childs Streets, and plans construction of oil storage and distributing plant, with steel tanks and facilities for initial capacity of about 500,000 bbl. Project will include main unit, 150 x 350 ft., and motor truck service, repair and garage building, 75 x 116 ft. Pier, 40 ft. wide and 720 ft. long, will be built, to be provided with conveying, loading and other handling equipment.

Kreider-Reisner Aircraft Co., Inc., Pennsylvania Avenue, Hagerstown, Md., has plans for one-story addition, with two-story section, totaling about 7200 sq. ft. floor space, for expansion in airplane assembling and parts production, to cost about \$50,000 with equipment. Company will also build a hangar, 60 x 80 ft., at local airport, with shop and repair facilities. H. Henry Reisner is head.

Southern Building Products Corporation, Savannah Fire Insurance Building, Savannah, Ga., recently formed as a subsidiary of Certain-teed Products Corporation, 100 East Forty-second Street, New York, to manufacture roofing and kindred building products, has awarded general contract to Artley Co., 504 East Bay Street, Savannah, for new local plant, including boiler house, machine shop and auxiliary structures, with storage and distributing facilities, to cost more than \$400,000 with equipment. W. G. Will is company engineer in charge.

Nachman-Springfield Co., 2241 South Halsted Street, Chicago, manufacturer of upholstery and mattress springs, etc., has arranged for establishment of branch plant at Norfolk, Va.

Valliant Fertilizer Co., Marine Bank Building, Baltimore, is considering new two-story commercial fertilizer manufacturing plant at Pocomoke, Md., to cost about \$50,000 with equipment.

Keystone Water Works & Electric Corporation, Wilson, N. C., operating electric light and power utilities, ice plants and waterworks in North Carolina, Ohio, West Virginia, Kentucky, Georgia and other States, has disposed of a stock issue totaling \$1,300,000, part of proceeds to be used for expansion.

City Council, Rome, Ga., has appointed special committee, headed by Hugh McCarty, to complete plans for a municipal

electric light and power plant, to cost over \$250,000 with equipment.

Leroi Patent Cup Co., Savannah, Ga., manufacturer of turpentine containers and kindred products for naval stores, is planning one-story addition, to cost about \$25,000 with equipment.

Chesapeake & Ohio Railroad Co., Richmond, Va., has work under way on expansion at local engine terminal and shops, including new engine house, with machine, boiler-washing and other shop units, to cost about \$800,000 with equipment, including similar expansion at Fulton, now in progress.

## Cincinnati

CINCINNATI, Oct. 14.—Although inquiry continues good, the slowness of buyers to close after receiving quotations has caused a slight recession in the volume of new orders in this district. While business in September was good, the total was less than that of August, although slightly ahead of September last year. Fresh bookings the past week were about equal to the preceding week and were mostly for one or two machines. A Chicago buyer is inquiring for several small planers.

The Niagara Machine & Tool Works placed an order with a local manufacturer for one large planer, and the Hamilton Manufacturing Co., Two Rivers, Wis., bought one medium sized planer. An Eastern buyer purchased four 16-in. lathes from a local builder.

Contract for construction of first unit of plant for Crosley Aviation Co. was awarded last week to Austin Co., Cleveland. Building will be one story, 100 x 120 ft.

Exact Weight Scale Co., 265 West Spring Street, Columbus, Ohio, has awarded general contract to E. Elford & Sons, Inc., Columbus, for one-story plant, totaling 35,000 sq. ft. floor space, to cost \$100,000 with machinery. Carmichael & Milspaugh, 8 East Long Street, are architects.

Board of Education, Jackson, Ohio, is said to be planning installation of manual training equipment in new three-story high school to cost about \$240,000, for which plans are being drawn by Granville Scott, Citizens' Bank Building, Norwalk, Ohio, architect.

Southern Ohio Electric Co., Athens, Ohio, is disposing of bond issue to total \$2,487,000, part of proceeds to be used for expansion and improvements in power plants and system. Company is closing negotiations for purchase of plant and property of Chillicothe Electric Railroad, Light & Power Co., Chillicothe, Ohio, and will consolidate; extensions and betterments will be carried out, including transmission line construction.

Knoxville Power & Light Co., Knoxville, Tenn., has awarded a general contract to Gervin Construction Co., 215 North Broadway, for one-story brass foundry and forge shop, to cost about \$35,000 with equipment.

Federal Tile Co., North High Street, Columbus, Ohio, manufacturer of roofing tile, etc., has acquired local property as site for new three-story plant, to cost about \$100,000 with equipment.

Delco Products Co., 329 East First Street, Dayton, Ohio, manufacturer of isolated electric lighting plants, lighting and starting equipment for automobiles,

etc., has plans for new seven-story unit, to cost about \$200,000 with equipment.

Tennessee-Eastman Corporation, Kingsport, Tenn., subsidiary of Eastman Kodak Co., Rochester, N. Y., has approved construction of steam-operated electric power plant at local chemical works, 52 x 100 ft., to cost over \$85,000 with equipment. Baker & Spencer, 17 Battery Place, New York, are engineers.

## Detroit

**D**ETROIT, Oct. 14.—Wolverine Bolt Co., 9660 French Road, Detroit, manufacturer of bolts, nuts, studs, etc., has awarded general contract to Henry W. Heide, 1243 Rademaker Avenue, for one-story plant unit, to cost about \$70,000 with equipment. Mildner & Eisen, Hamm Building, are architects.

Beck, Koller & Co., General Motors Building, Detroit, manufacturer of mechanical equipment, has awarded general contract to Austin Co. for one-story machine shop at Hamtramck, Mich., to cost about \$40,000 with equipment.

AC Spark Plug Co., Flint, is planning three-story addition, 100 x 160 ft., to cost about \$100,000 with equipment. Several departments, including testing division and laboratories will be removed to new unit and additional equipment provided. Space vacated will be used to manufacture an electric gasoline gage, recently perfected by company. Harlow H. Curtice is vice-president and assistant general manager.

Motor Wheel Corporation, Saginaw Street, Lansing, manufacturer of wire and steel disk automobile wheels, has asked bids on general contract for four-story addition, to cost about \$200,000 including equipment.

Interests identified with Detroit Edison Co., 2000 Second Avenue, Detroit, have organized Electro-Master, Inc., to take over and operate electric range manufacturing division of utility company, known as Electrochef, including local plant unit. New company will have assets of about \$1,000,000 and will increase production facilities. Warren Noble is president; and Richard B. Marshall, vice-president and general manager.

Ford Motor Co., Detroit, has superstructure under way on new units at aircraft plant at Fort Dearborn, Mich., for production of one all-metal tri-motor airplane per day. It is proposed to remove small parts and forging departments from River Rouge plant to Fort Dearborn as soon as new units are ready.

Page Steel & Wire Co., Adrian, will carry out expansion, including installation of additional machinery for new department for production of a front wheel brake cable for Chevrolet Motor Co., Flint, to cost close to \$75,000.

Hayes Body Corporation, Seventh Street, N. W., Grand Rapids, has asked bids on general contract for one-story metal press shop, 175 x 565 ft., to cost about \$250,000 with equipment. Fett, Pearson & Goffeney, Associates Building, South Bend, are architects.

Evans Auto Loading Co., Union Trust Building, Detroit, manufacturer of automobile loading decks and equipment, and other loading devices, has disposed of a bond issue of \$900,000, part of proceeds to be used for expansion.

Chrysler Corporation, 12200 East Jefferson Street, Detroit, has awarded general contract to W. E. Wood Co., Union Trust Building, for one-story machine shop,

150 x 160 ft., to cost about \$85,000 with equipment.

Commerce Pattern Foundry & Machine Co., Grand River Avenue, Detroit, is building an addition to manufacture machine tools, to cost \$30,000. Contract for design and construction has been awarded to Austin Co., Cleveland.

Acorn Nut Co., Flint, Mich., has been incorporated with capital of \$250,000 to manufacture metal nuts, particularly those used by automobile industry. A new plant erected at Flint is now operating with a daily capacity of 120,000 acorn nuts.

## Pittsburgh

**P**ITTSBURGH, Oct. 14.—Machine tool business has been active the past week from both the standpoint of orders and new inquiries. Many local dealers will benefit by orders booked at the machine tool show, while others are now actively engaged in following up leads. The fourth quarter list of the Westinghouse Electric & Mfg. Co. is now out and orders for some of the tools will begin to be placed immediately. The Norfolk & Western has also issued a list, but it is the only railroad which has yet brought out an inquiry of importance. Nevertheless, local dealers look to the railroads for rather heavy purchases in the next three months.

Orders are being placed regularly for equipment for the last steel plant expansion in this district and heavy machinery makers and crane builders are busier than they have been for a long time. Purchases are being made regularly for the McKeesport plant of the National Tube Co., and other Steel Corporation subsidiaries, notably the American Sheet & Tin Plate Co., have been large buyers.

**Babcock & Wilcox Tube Co.** Farmers' Bank Building, Pittsburgh, an interest of Babcock & Wilcox Co., same address, manufacturer of watertube boilers, etc., headquarters at 85 Liberty Street, New York, has approved an expansion program at Beaver Falls, Pa., to double approximately present capacity, to cost more than \$400,000.

Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, has work under way on new sheet glass plant at Crystal City, Mo., to cost more than \$500,000 with machinery. Company is also building new sheet glass mill at Henryetta, Okla., to cost over \$1,000,000 with equipment. Work is in progress on extensions in plant at Mount Vernon, Ohio.

Carbide & Carbon Chemical Corporation, 30 East Forty-second Street, New York, has awarded contract to Kinstrey Co., South Charleston, W. Va., for new plant at that place for production of synthetic alcohol and allied products, consisting of four main units, to cost more than \$1,500,000 with machinery.

International Nickel Co., 67 Wall Street, New York, has awarded general contract to Hatfield Construction Co., Fourteenth Street, Huntington, W. Va., for two one-story additions to Huntington mill. Main unit will be 158 x 400 ft., and will be occupied by American Mond Nickel Co., Clearfield, Pa., a recently acquired subsidiary, which will be removed to Huntington and capacity increased for production of cold drawn nickel specialties. Project will cost more than \$350,000.

## Milwaukee

**M**ILWAUKEE, Oct. 14.—Renewed activity in the machine tool trade indicates fall volume comparable with any during the summer. Much pending business is being closed following the Cleveland show. Some manufacturers of electrical machinery, construction equipment, cranes, tractors and agricultural implements are contemplating expansion, but few of the plans are as yet out of the hands of the draftsmen. Activity in the pattern shops is beginning to be followed by increased production in the foundries.

Quantity production is being slowly resumed in local automobile factories and changed models have necessitated purchase of considerable special equipment. The delivery situation has not improved.

Yates-American Machine Co., Beloit, Wis., has authorized purchase of \$250,000 for expansion and modernization of plants at Beloit, Rochester, N. Y., and Hamilton, Ont.

Universal Tool & Die Co., 128 Ferry Street, Milwaukee, is completing new two-story plant, 75 x 150 ft., to cost \$50,000.

Pittsburgh Plate Glass Co., paint and varnish division, 205 Pittsburgh Avenue, Milwaukee, has announced \$2,000,000 enlargement program for its paint, varnish and lacquer plants at Milwaukee, construction to begin next spring. Ludington Patton is resident vice-president in charge.

Hamilton Mfg. Co., Two Rivers, Wis., manufacturer of dentists' equipment and wood and steel printers' furniture, has let contracts for two-story addition, 65 x 178 ft., to cost about \$75,000. W. Frank Dolke, Jr., Chicago, is consulting engineer, and T. W. Suttard, secretary, is in charge.

Barnes-Ames Co., 201 Board of Trade Building, Duluth, Minn., will build new grain elevator at Superior, Wis., next spring to cost about \$1,500,000. Arthur P. Barnes is secretary.

Northern Conveyor & Mfg. Co., Janesville, Wis., through the completion of a plant addition, 160 x 200 ft., has doubled its capacity. Additional land has been bought for future extensions to present plant area of 64,000 sq. ft.

## Gulf States

**B**IRMINGHAM, Oct. 14.—Hughes Tool Co., 300 Hughes Street, Houston, Tex., manufacturer of oil well tools and equipment, has plans for one-story addition, 35 x 180 ft., to cost about \$50,000 with equipment.

Acme Machine Co., Galveston, Tex., is planning to rebuild part of plant destroyed by fire Oct. 6.

City Council, Shreveport, La., has engaged J. N. Chester, Clark Building, Pittsburgh, engineer, to prepare plans for new municipal pumping plant at Cross Lake, to cost \$425,000 with machinery.

Board of Education, Texarkana, Tex., is considering installation of manual training equipment in new high school to cost \$150,000, for which plans will be drawn by Witt, Seibert & Halsey, Texarkana, architects.

Atlas Metal Works, Inc., 2601 Alamo Street, Dallas, Tex., has awarded general contract to Austin Brothers, 1815 Coombs Street, for one-story plant unit at West

Dallas, 200 x 210 ft., to cost about \$100,000 with equipment.

City Council, Fort Worth, Tex., has plans for new units at municipal airport, including hangar, 80 x 100 ft., with repair and reconditioning facilities, two-story administration building, 45 x 100 ft., and other structures. Fund of \$500,000 recently was voted for airport and buildings. C. M. Thelin is city engineer in charge.

Pasotex Petroleum Co., Womble Boulevard, El Paso, Tex., is considering expansion at local oil refinery to increase capacity close to 2000 bbl. daily, developing total output of 5500 bbl. per day; new storage and distributing units will be built. Entire program will cost about \$1,000,000 with equipment.

Board of Education, El Paso, Tex., is considering installation of manual training equipment in new two-story high school to cost about \$350,000, for which plans are being drawn by Guy L. Frazer, Martin Building, architect; Brautson & McGhee, First National Bank Building, are associate architects.

Sugar By-Products Corporation, 7407 Bordeaux Street, New Orleans, R. E. Blouin, president, has arranged financing to an amount of about \$500,000, considerable part of fund to be used for construction of alcohol distilling plant, including by-products factory for production of potash specialties, acids, etc.

City Council, Tampa, Fla., is planning new municipal airport at Ballast Point, Hillsborough Bay district, to cost about \$700,000 with hangars, repair and reconditioning shops, oil storage and other units. An additional fund of \$50,000 is proposed for improvements at present airport. Special election has been called on Nov. 16 to approve bonds for \$750,000.

Central Power & Light Co., San Antonio, Tex., plans extension and improvements in steam-operated electric power plant at Presidio, Tex., including installation of new engine unit and other machinery, to cost over \$100,000.

## Indiana

INDIANAPOLIS, Oct. 14.—Bendix Aviation Corporation, South Bend, manufacturer of airplane accessories and equipment, a subsidiary of Bendix Corporation, has awarded general contract to H. G. Christman & Co., 306 South Notre Dame Avenue, for one-story addition, 360 x 1000 ft., to cost about \$450,000 with equipment.

Blackford Window Glass Co., 537 Willow Street, Vincennes, is considering new unit for production of sheet glass, to cost about \$100,000 with equipment. Frank J. Bastin is president.

Indiana Consumers Gas & By-Products Co., Terre Haute, operating by-product gas plants and system, has disposed of a preferred stock issue to total \$2,000,000, part of fund to be used for extensions, including construction of new high pressure gas lines, about 78 miles, and increased distributing facilities.

Board of School Commissioners, 150 North Meridian Street, Indianapolis, is considering installation of manual training equipment in three-story and basement Irvington High School, to cost about \$750,000, for which bids will soon be asked on general contract. McGuire & Shook, 941 North Meridian Street, are architects.

Time-O-Stat Controls Co., Elkhart, manufacturer of electrically-operated control devices and equipment, has awarded

general contract to George C. Kistner Co., 514 South Main Street, for one-story plant unit, to cost about \$25,000 with equipment.

D-A Lubricant Co., Twenty-ninth Street and Canal, Indianapolis, has awarded general contract to Brown & Mick, Inc., 1020 East Michigan Street, for two-story and basement oil storage and distributing plant, to cost about \$38,000 with equipment.

American Metal Furniture Co., Indianapolis, has awarded contract for erection of a new factory, 150 x 200 ft. Company specializes in furniture for physicians' and dentists' offices.

Peerless Wire Goods Co., Lafayette, manufacturer of wire baskets, bakers' equipment and other products, will erect a new plant, consisting of group of buildings, which will provide 65,000 additional feet of floor space.

## Pacific Coast

SAN FRANCISCO, Oct. 10.—Alco Oil Tool Co., Compton, Cal., has awarded general contract to A. R. Eaton, 526 Burton Avenue, for one-story addition, 60 x 350 ft., to cost about \$60,000 with equipment.

Fokker Aircraft Co., Glendale, W. Va., has awarded general contract to Eaves Construction Co., 1524 LaBalg Street, Los Angeles, for new airplane manufacturing plant near El Monte, Cal., adjoining airport of Western Air Express, to cost about \$300,000 with equipment. Works will include units for parts production and assembling.

Las Vegas High School District, Las Vegas, Nev., plans manual training shop at new high school group to cost \$250,000, for which plans are being completed by George Ferris & Son, Reno, Nev., architects.

Imperial Valley Irrigation District, El Centro, Cal., is considering installation of steam-operated electric generating plant with capacity of 6000 kw., using Diesel engine units, instead of group of hydroelectric generating plants, in accordance with recommendations made by Edward Hyatt, State engineer, to cost more than \$100,000 with equipment.

State Board of Harbor Commissioners, San Francisco, has plans for extensions and improvements in cold storage and refrigerating plant at Pier 48, to cost about \$250,000 with equipment. Frank White, Ferry Building, is engineer.

Olympic Forest Products Co., Port Angeles, Wash., has awarded general contract to Christopher Kuppler, Port Angeles, for two one-story units for local pulp mill, 150 x 370 ft., and 60 x 257 ft., latter to be used in part as a machine works, to cost more than \$1,000,000 with equipment. J. H. Bloedel and Joseph Irving head company.

Puget Sound Power & Light Co., Seattle, has arranged for a bond issue of \$8,000,000, part of proceeds to be used for expansion in power plants and system. Company is planning for hydroelectric generating plant on Skyhomish River, near Everett, Wash., to cost more than \$1,500,000. It is operated by Stone & Webster, Inc., Boston.

Huntington Park Union High School District, Huntington Park, Cal., is considering installation of manual training equipment in new high school at South Gate, to cost \$300,000, for which bids will soon be asked on general contract. George M. Lindsey and Erwood P. Elden,

Insurance Exchange Building, Los Angeles, are architects.

Oliver United Filters Co., Fourth and Madison Streets, Oakland, Cal., manufacturer of filtering machinery, parts, etc., is considering new plant in Fruitvale district, to cost over \$75,000 with equipment.

McLennan, McFeely & Prior, Ltd., Vancouver, B. C., iron and steel merchant and hardware jobber, has purchased Anderson & Lusby, New Westminster, B. C., and will operate the latter under the name of Anderson & Lusby, Ltd., with L. B. Lusby as director and manager. McLennan, McFeely and Prior, Ltd., was created in June, 1928, through a consolidation of McLennan, McFeely & Co. and E. G. Prior & Co., Victoria, B. C.

## Canada

TORONTO, Oct. 14.—Current demand for machine tools is well up to the average for the year, with inquiries in good volume. Railroads are buying for shop replacements and considerable business is pending for plants under construction. The automotive industry is a regular customer and while most of the orders are for one or two tools, total sales show a good average each week. The manufacturing industry as a whole is maintaining a steady demand for machine tools.

Bancroft Light & Power Co., Bancroft, Ont., has plans for construction of a power plant to cost \$40,000. Work will be started next spring.

Electric Auto Light Corporation, Toledo, Ohio, has let general contract to Thomas Grace, 291 Christina Street South, Sarnia, Ont., for a one-story plant at Point Edward, Ont.

Thompson Products Co., 2196 Clarkwood Road, Cleveland, will build a manufacturing plant at St. Catharines, Ont., bids to be called Nov. 15. Roberts-Wright Co., Swetland Building, Cleveland, is engineer.

Canadian Metal Window & Steel Products Co., Ltd., 160 River Street, Toronto, has awarded contract to Walter Davidson & Co., 188 Duke Street, for an addition.

St. John Iron Works, Vulcan Street, St. John, N. B., has awarded contract to George Lawson, 61 Wright Street, for a foundry to cost \$20,000.

Dominion Coal Co., a subsidiary of British Empire Steel Corporation, has awarded contract to United Engineers & Constructors, Ltd., Montreal, for design and construction of a steam power plant at Glace Bay, N. S.

E. B. Eddy Co., Hull, Que., will build a \$1,500,000 paper mill on its property. A survey has been made and plans are being prepared by company's architect, M. Pratt.

Royal Securities Corporation, 244 St. James Street, Montreal, has awarded contract to Morrow & Beatty, Ltd., Peterborough, Ont., for construction of a power development plant at Chats Falls, Que., to cost \$2,500,000.

## Foreign

PROPERTY at La Plata, Argentina, has been acquired by Goodyear Tire & Rubber Co., Akron, Ohio, as site for new plant to manufacture automobile tires and tubes, to cost more than \$3,000,000 with equipment.

Compania Mexicana de Gas, Monterey, Mexico, a subsidiary of Moody-Seagraves Co., Fort Worth, Tex., has begun construction of pipe line from Jennings gas field, Zapata County, Tex., to Monterey, by way of Roma, Tex., about 142 miles, for natural gas supply at Monterey and vicinity, to cost more than \$400,000 with booster stations and operating facilities.

American & Foreign Power Co., 2 Rector Street, New York, operated by Electric Bond & Share Co., same address, has concluded arrangements with Minas Geraes State Government, Brazil, to take over and operate electric light, power and traction properties at Belle Horizonte, capital of State. Acquiring company plans expansion and improvements, to cost more than \$1,000,000 with equipment; property will be operated in conjunction with other utilities now controlled in that district. American & Foreign Power Co. has also secured a 50 per cent interest in Tata Sons, Ltd., Bombay, India, operating Tata Hydroelectric Agencies, Ltd., furnishing electric light and power at Bombay and vicinity, and will be active in management; expansion is proposed.

Seiberling Rubber Co., Akron, Ohio, manufacturer of automobile tires and other rubber goods, is planning for early establishment of new plant in Germany to manufacture tires and tubes. Entire project is reported to cost about \$500,000 with equipment.

Real del Monte Mining Co., Pachuca, State of Hidalgo, Mexico, has plans for extensions and improvements in local gold and silver milling plants and properties, to include new buildings and machinery, to cost about \$1,750,000.

## New Trade Publications

**Triple-Service Boilers.**—International Boiler Works Co., East Stroudsburg, Pa. Circulars illustrating and describing a water-tube boiler for domestic use which has within its shell arrangements for heating a house by steam or hot water through the use of gas or oil as fuel, a domestic hot water heater and a garbage incinerator. This boiler is made in 21 sizes ranging from 500 to 12,000 sq. ft. of steam radiation.

**Steel Shelving.**—General Fireproofing Co., Youngstown, Ohio. A catalog has been issued illustrating over 2000 different combinations of steel shelving which are designated as standard units. The listing of these units, with the price sheet accompanying the catalog, simplifies the matter of selecting and ordering steel shelving.

**Firebond High-Temperature Cement.**—Harbison-Walker Refractories Co., Pittsburgh. An elaborate booklet of 12 pages tells in pictures and words how the use of Firebond will reduce furnace maintenance costs by prolonging the life of refractory linings. Tables for calculating the quantities of brick required for arches of different spans and thicknesses are published.

**Flexible Couplings.**—Poole Engineering & Machine Co., Baltimore. Advantages of using Poole flexible couplings are set forth in a 36-page illustrated hand book. Many typical installations are described.

**Squirrel Cage Induction Motors.**—Century Electric Co., St. Louis. Bulletin No. 6-1 describes type SCN squirrel cage induction polyphase motors.

## The Week's News Quickly Told

### Current Events That Bear on the Course of Business

**WAR** between nations is banished by Kellogg treaty, consequently old problems can be approached "from a new angle and in a new atmosphere," to quote the statement issued by President Hoover and Premier MacDonald. Addressing the Senate, the latter said that war is "impossible if you and we do our duty" and endorsed naval parity without reserve.

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**RADIO** successfully broadcast Premier MacDonald's speeches to listeners in England. . . . Radio telephone connection has been made between New York and Australia, 15,000 miles. . . . Communications between Spain and South America are much improved by new wire lines between Chile and Uruguay, across the Andes, pampas and Rio Platte, and a beam wireless to Seville, 6,000 miles away.

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**SHIPMENTS** from Winnipeg to England via the Hudson Bay railroad have been commenced by the Hudson Bay Co., which in 1668 started to trade over this route. . . . The largest American-built passenger ship, the Pennsylvania, of 33,000 tons, has been built at Newport News and delivered within one year; it will ply between Atlantic and Pacific ports. . . . Rolling stock and auxiliary equipment for New York subways costing \$20,146,000 will be purchased.

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**AIRPLANES** weighing 50 to 100 tons, to carry 200 persons in regular 36-hr. trans-Atlantic flight, are expected in the near future by Igor Sikorsky. . . . French aviators Coste and Bellonte fly 6,160 miles, a record distance, Le Bourget to Manchuria. . . . The huge British dirigible R-101 passes preliminary tests and is visited by a million sight-seers.

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**TRAFFIC** on the Philadelphia-Camden bridge has in three years reached the capacity of its approaches; it is carrying about a million automobiles a month, and will pay for itself by 1940, six years ahead of the expected time. . . . Purchase of foreign plants by General Motors, said President A. P. Sloan, is not to stifle competition but to provide plants for manufacturing a European car for European markets. . . . He expects a steady annual consumption of 5,000,000 cars in America, but executives of Willys-Overland and Reo believe the 1930 production must be kept to 1929 figures to avoid saturation of market.

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**BUSINESS** men are generally optimistic over trade conditions, which compare well with the corresponding period last year, even though the large margins of advance made

earlier in 1929 have not been maintained. Wholesale trade, jobbing, retail trade and car loadings show that consumption of goods is pursuing a normal and steady course. . . . Sales of life insurance, said to form a new barometer of prosperity, are considerably higher than a year ago. . . . Each of the trans-Mississippi "corn and cow States" shows a material decrease in farm mortgage indebtedness since 1925. . . . Pacific coast industrial employment and activity are making records.

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**CALL** money dropped to 5 per cent, the lowest for over a year, and collateral time loans also declined nearly 1 per cent. Easy money is said to be due to closing out of many speculative accounts during the recent stock market slump. . . . Sterling crossed par for the first time in 14 months, and gold exports from England abruptly stopped. . . . Committees, meeting at Baden-Baden to formulate rules of conduct for World Bank, consider whether the bank should be limited to the duty of handling German reparations, or permitted to serve as an international clearing house to stabilize national currencies and prevent industrial panics. . . . Americans subscribed to a third of a billion of dollars in South American governmental bonds last year, a record figure.

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**COFFEE** prices crumbled so rapidly that one day the exchange closed early in accordance with its rule to limit price changes to 2c. in one day. Brokers believe that the Brazilian Government's attempt to peg the price has failed because of expanded production.

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**RUBBER** producers and consumers are planning a central selling organization capable of pooling 20 per cent of the plantation rubber whenever necessary to maintain price. F. R. Henderson, president New York Rubber Exchange, opposes the idea, saying that an open market has kept the price between 18 and 28c., whereas most violent fluctuations (35c. to \$1.21) occurred during the British growers' attempt to restrict the output. . . . Tire manufacturers have a 16,000,000 inventory, 40 per cent above a year ago, and about a 2-months' supply—said to be without danger as long as crude rubber prices remain steady.

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**UTILITY** earnings (gross) are steadily increasing, year by year. Net earnings are increasing at an even higher rate. For the first eight months of 1926 net was 35 per cent of the gross; now it is 43 per cent.